ENGINEERED PERFORMANCE STANDARDS

BOOK NUMBER - 06

MACHINE SHOP/REPAIR

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Anchor Plates, Bolts, Studs: Fabricate.
Anchor Plates: Fabricate plate from 1" mild steel. Drill four holes in corners. Includes set up power hacksaw and drill press. Tasks for milling include set up time for milling machine.
Bolts: Fabricate bolts. Includes cut stock to size on power hacksaw and thread on bolt threading machine. Includes studs if threaded on one end only. Average 6" of thread.
Studs: Fabricate studs. Includes cut stock to size on power hacksaw and thread studs on threading machine. Thread both ends. (Thread length is equivalent to threads on each end).

TASK TIME STANDARDS LISTING

MT 050	ANCHOR PLATES-	3/4"thk.x10"x6",	(fabricate)	no milling	
MT 034	ANCHOR PLATES-	3/4"thk.x10"x6",	(fabricate)	mill top/bottom	
MT 051	ANCHOR PLATES-	1" thk.x10"x6",	(fabricate)	no milling	
MT 049	ANCHOR PLATES-	1" thk.x10"x6",	(fabricate)	mill top&bottom	
MT 054	1.5"D BOLTS-	stainless steel	or tool steel	(fabricate)	
MT 053	1.5"D BOLTS-	mild steel	or cast iron	(fabricate)	
MT 052	1.5"D BOLTS-	non-ferrous	;bronze,brass,alum.	(fabricate)	
MT 057	1.5"D STUDS-	stainless steel	or tool steel	(fabricate)	
MT 056	1.5"D STUDS-	mild steel	or cast iron	(fabricate)	
MT 055	1.5"D STUDS-	non-ferrous	;bronze,brass,alum.	(fabricate)	

MT 050 Fabricate 3/4" x 10" x 6" anchor plates. Cut from 3/4" x 6" mild steel. Drill four 1" holes in corners. Includes set up of power hacksaw and drill press.

000.35850 hours per JOB SETUP TIME

000.22034 hours per anchor plates to fabricate

MT 034 Fabricate anchor plates, 3/4" x 10" x 6", cut from 1" x 6" mild steel stock - mill top and bottom surface - drill four 1" holes in corners. Includes set up of power hacksaw, drill press and milling machine.

000.65361 hours per JOB SETUP TIME

000.78989 hours per anchor plates to fabricate

MT 051 Fabricate 1" x 10" x 6" anchor plates. Cut from 1" x 6" mild steel stock and drill four 1" holes. Includes set up power hacksaw and drill press.

000.35850 hours per JOB SETUP TIME

000.25511 hours per anchor plates to fabricate

MT 049 Fabricate 1" x 10" x 6" anchor plates. Use 1" mild steel. Mill 1/16" from top and bottom and drill four 1" holes in corners. Includes set up of power hacksaw, drill press and milling machine.

000.65361 hours per JOB SETUP TIME

000.86549 hours per anchor plates to fabricate

MT 054 Fabricate 1.5" diameter stainless steel or tool alloy bolt. Thread both ends on bolt threading machine. Stock cut to size on power hacksaw.

000.15686 hours per JOB SETUP TIME

000.07093 hours per bolts to fabricate

MT 053 Fabricate 1.5" diameter mild steel bolt. Cut stock to size on power hacksaw and thread on bolt threading machine.

000.15686 hours per JOB SETUP TIME

000.05489 hours per bolts to fabricate

MT 052 Fabricate 1.5" diameter non-ferrous (bronze, brass or aluminum) bolts. Cut stock to size on power hacksaw, thread on bolt threading machine.

000.15686 hours per JOB SETUP TIME

000.03601 hours per bolts to fabricate

MT 057 Fabricate 1.5" diameter stainless steel or tool alloy stud. Cut stock on power hacksaw; thread both ends on bolt threading machine.

000.15686 hours per JOB SETUP TIME

000.07637 hours per studs to fabricate

MT 056 Fabricate 1.5" diameter mild or CRS stud. Cut stock on power hacksaw; thread both ends on bolt threading machine.

000.15686 hours per JOB SETUP TIME

000.06033 hours per studs to fabricate

MT 055 Fabricate 1.5" diameter non-ferrous (bronze, brass or aluminum) stud. Cut stock on power hacksaw; thread both ends on bolt threading machine.

000.15686 hours per JOB SETUP TIME

000.04145 hours per studs to fabricate

Hacksaw, Power: Cut Metal.
Cut flat, round or hexagonal stock on power hacksaw. Includes set up power hacksaw.

TASK TIME STANDARDS LISTING

MT 066	1- 3sq.in.	STAINLESS STEEL	or tool steel	power-(hacksaw)
MT 067	3-13sq.in.	STAINLESS STEEL	or tool steel	power-(hacksaw)
MT 068	13-20sq.in.	STAINLESS STEEL	or tool steel	power-(hacksaw)
MT 069	1- 3sq.in.	MILD STEEL	or cast iron	power-(hacksaw)
MT 064	3-13sq.in.	MILD STEEL	or cast iron	power-(hacksaw)
MT 065	13-20sq.in.	MILD STEEL	or cast iron	power-(hacksaw)
MT 061	1-3 sq.in.	NON-FERROUS		power-(hacksaw)
MT 062	3-13sq.in.	NON_FERROUS		power-(hacksaw)
MT 063	13-20sq.in.	NON-FERROUS		power-(hacksaw)

EPS TASK TIME STANDARDS - DESCRIPTIONS AND UNIT HOURS

MT 066 Cut thru 3 square inch stainless steel or tool steel cross section. Flat, round or hexagonal stock. Includes set up of power hacksaw.

000.05085 hours per JOB SETUP TIME

000.08085 hours per cross sections to cut thru

MT 067 Cut 3 thru 13 square inch stainless steel or tool steel cross section. Flat, round or hexagonal stock. Includes set up of power hacksaw.

000.19922 hours per JOB SETUP TIME

000.24745 hours per cross sections to cut thru

MT 068 Cut 13 thru 20 square inch stainless steel or tool steel cross section. Flat, round or hexagonal stock. Includes set up of power hacksaw.

000.20234 hours per JOB SETUP TIME

000.43785 hours per cross sections to cut thru

MT 069 Cut thru 3 square inch mild steel (cast iron) cross section. Stock flat, round or hexagonal. Includes set up of power hacksaw.

000.05085 hours per JOB SETUP TIME

000.05955 hours per cross sections to cut thru

MT 064 Cut 3 thru 13 square inch mild steel (cast iron) cross section. Cut, stock flat, round or hexagonal. Includes set up power hacksaw.

000.19922 hours per JOB SETUP TIME

000.17645 hours per cross sections to cut thru

MT 065 Cut 13 thru 20 square inch mild steel (cast iron) cross section; Cut, stock flat, round or hexagonal. Includes set up of power hacksaw.

000.20234 hours per JOB SETUP TIME

000.31005 hours per cross sections to cut thru

MT 061 Cut thru 3 square inch non-ferrous metal cross section. Flat, round, or hexagonal stock. Includes set up power hacksaw.

000.05085 hours per JOB SETUP TIME

000.03345 hours per cross sections to cut thru

MT 062 Cut 3 thru 13 square inch non-ferrous metal cross section. Flat, round or hexagonal stock. Includes set up power hacksaw.

000.19922 hours per JOB SETUP TIME

000.08945 hours per cross sections to cut thru

MT 063 Cut 13 thru 20 square inch non-ferrous metal cross section. Flat, round or hexagonal stock. Includes set up power hacksaw.

000.20234 hours per JOB SETUP TIME

000.15345 hours per cross sections to cut thru

Machine Bearings and Bushings; Fabricate.
Fabricate bronze bearings and bushings, including set up of lathe, drill press and arbor press. The fabrication of bearings includes drilling oil holes and pressing bearings into motor end housing. Bushings includes cutting oil grooves.

TASK TIME STANDARDS LISTING

MT 058 BEARINGS-bronze to 3-1/2" OD X 3" ID X 3" long

MT 059 BUSHINGS-bronze 1-3/16" OD X 1" ID X 1-7/8"long
MT 060 BUSHINGS-bronze 1-1/4 " OD X 1-1/16" ID X 2" long up to 3-1/2" OD X 3" ID X 3" long

EPS TASK TIME STANDARDS - DESCRIPTIONS AND UNIT HOURS

MT 058 Fabricate 3.5" O.D. x 3" I.D x 3" long bronze bearing. Drill oil holes and press bearings into motor end housing. Includes set up engine lathe, drill press and arbor press.

000.41050 hours per JOB SETUP TIME

001.27636 hours per bearings to fabricate

MT 059 Fabricate 1.187" OD x 1" ID x 1.875" long bronze bushings. Cut oil grooves. Includes set up of lathe.

000.22635 hours per JOB SETUP TIME

000.78470 hours per bushings to fabricate

MT 060 Fabricate 3.5" OD x 3" ID x 3" long bronze bushings. Cut oil grooves. Includes set up of engine lathe.

000.22635 hours per JOB SETUP TIME

000.99917 hours per bushings to fabricate

Machinery Parts; Resurface by metal spraying.
Resurface machinery parts by metal spraying. Includes set up of lathe and spray equipment.

TASK TIME STANDARDS LISTING

MT 017	30" X 36"	STEEL PLATE -	(metal spray)-w/ANY METAL
MT 001	1" dia. X 12" long	STEEL SHAFT -	(metal spray)-w/MOLYBDENUM
MT 002	1" dia. X 18" long	STEEL SHAFTS(3 @)	(metal spray)-w/NICKEL
MT 014	3" dia. X 6" long	STEEL JOURNALS	(metal spray)-w/MONEL
MT 007	4" dia. X 2" long	STEEL SHAFT -	(metal spray)-w/STAINLESS
MT 012	6" dia. X 10" long	STEEL SHAFT -	(metal spray)-w/STAINLESS
MT 006	2" dia. X 6" long	BRASS SHAFT -	(metal spray)-RESURFACE
MT 003	1.25"dia.X 2 "long	BRASS BEARING(2 @)	(metal spray)-RESURFACE
MT 010	3.5"dia.X 3.5"long	STEEL SLEEVE-	(metal spray)-w/STAINLESS
MT 013	1" dia. X 2.5"long	JOURNALS (2 @)	(metal spray)-w/STAINLESS motor shaft
MT 009	1" dia. X 2.5"long	JOURNALS-on shaft	(metal spray)-w/STAINLESS two journals on steel
MT 004	1" dia. X 4" long	JOURNAL -on shaft	(metal spray)-w/MONEL
MT 011	1.75"dia.X 4" long	JOURNALS-on shaft	(metal spray)-w/STAINLESS on steel,2ea.on opp.ends of shaft
MT 005	3" dia. X 3" long	JOURNAL -on shaft	(metal spray)-w/STEEL
MT 016	6" dia. x 6"&9"long	JOURNAL-2ea onshaft	(metal spray)-w/STEEL
MT 008	8" dia. X 1" long	STEEL DRUM -	(metal spray)-w/MOLYBDENUM
MT 015	12" dia.X 8" long	STEEL DRUM-(2 @)	(metal spray)-w/MONEL

MT 017 Resurface one 30" x 36" steel surface plate by metal spraying. Mill to prepare surface to receive sprayed metal and after spraying. Does not include finish grinding or hand scraping.

011.14315 hours per steel surface plates to resurface

MT 001 Resurface one 12" long, 1" diameter, steel shaft with molybdenum by metal spraying. Surface preparation by solvent cleaning. Doe not include finish machining.

000.76504 hours per steel shafts to resurface

MT 002 Resurface three 18" long steel shafts, 1" diameter with nickel steel by metal spraying. Surface preparation by solvent cleanin Does not include machining.

000.45045 hours per steel shafts to resurface

MT 014 Resurface two 6" long journals on 3" diameter steel shaft by metal spraying. Machine on lathe to prepare surface before spraying and to finish after spraying.

002.21773 hours per journals to resurface

MT 007 Resurface one 2" long end section of 4" diameter shaft with stainless steel. Machine on lathe to prepare surface before spraying and to finish dimension after spraying.

002.36344 hours per end sections of shaft to resurface

MT 012 Resurface one 10" long end section of 6" diameter steel shaft with stainless steel by metal spraying. Machine on lathe to prepare surface before spraying and to finish after spraying.

004.81274 hours per end sections of steel shaft to resurface

MT 006 Resurface one 2" diameter brass pump shaft by metal spraying. Machine on lathe to prepare surface before spraying and to finish dimension after spraying.

002.07244 hours per brass pump shafts to resurface

MT 003 Resurface two 2" long bearing surface on 1.25" diameter brass shaft by metal spraying. Machine on lathe to prepare surface before spraying and machine to finish dimension after spraying.

000.93566 hours per bearing surfaces to resurface

MT 010 Resurface one 3.5" x 3.5" diameter pump sleeve by metal spraying with stainless steel using mandrel to spray and finish. Machine on lathe to prepare surface before spraying and to finish after spraying. Assemble and disassemble sleeve and mandrel with arbor press.

002.85955 hours per pump sleeves to resurface

MT 013 Resurface two 2.5" journals on 1" diameter motor shaft with stainless steel to fit new bushing installed in motor frame end bells. Machine shaft on lathe. Fabricate bushings and install with arbor press. Drill end bells.

002.88461 hours per journals to resurface

MT 009 Resurface two 2.5" long x 1" diameter journals on steel shaft with stainless steel. Machine lathe to prepare surface before spraying and to finish dimension after spraying.

001.65552 hours per journals to resurface

MT 004 Resurface one 4" long journal on 1" diameter steel shaft by metal spraying monel. Machine on lathe to prepare surface befor spraying and to finish dimension after spraying.

001.97309 hours per journals to resurface

MT 011 Resurface two 4" x 1.75" diameter journals on steel agitator shaft by metal spray with stainless steel. Machine on lathe to prepare and finish surface includes two fillets and six chamfers.

003.77788 hours per journals to resurface

MT 005 Resurface one 3" journal at end of 3" diameter steel shaft by metal spraying. Machine on lathe to prepare surface before spraying and to finish dimension after spraying.

001.97908 hours per journals to resurface

MT 016 Resurface two steel journals on an eccentric crank arm by metal spraying with stainless steel. One 6" diameter x 6" surface an one 6" diameter x 9" surface. Machine on lathe to prepare surface before spraying and to finish dimension after spraying.

003.41028 hours per journals to resurface

MT 008 Resurface outside surface of 8" diameter x 1" stainless steel drum with molybdenum by metal spraying. Machine on lathe to prepare surface before spraying and to finish dimension after spraying.

002.60512 hours per stainless steel drum exteriors to resurface

MT 015 Resurface two 12" diameter x 8" steel drums with monel by metal spraying. Machine on lathe to prepare surface before spraying and to finish dimensions after spraying.

005.12135 hours per steel drums to resurface

ALUMINUM PISTONS- Resurface by metal spraying.
Resurface aluminum pistons by metal spray. Set up lathe and spray equipment, pre-turn, undercut and finish to size.
Note: Scope of work is reduced starting at 7" diameter.
Threading and knurling deleted.

TASK TIME STANDARDS LISTING

MT 073	2" dia.	x 4-1/2"	long	(metal spray)
MT 074	3" dia.	x 6"	long	(metal spray)
MT 075	4" dia.	x 8"	long	(metal spray)
MT 076	5" dia.	x 10"	long	(metal spray)
MT 077	6" dia.	x 12"	long	(metal spray)
MT 078	7" dia.	x 14"	long	(metal spray)
MT 079	8" dia.	x 16"	long	(metal spray)
MT 080	9" dia.	x 18"	long	(metal spray)

EPS TASK TIME STANDARDS - DESCRIPTIONS AND UNIT HOURS

MT 073 Resurface 2" diameter x 4.5" long aluminum pistons by metal spraying. Set in lathe, pre-turn for undercut and finish turning to size.

000.70391 hours per JOB SETUP TIME

000.90749 hours per pistons to resurface

MT 074 Resurface 3" diameter x 6" long aluminum pistons by metal spraying. Set in lathe, pre-turn for undercut and finish turning to size.

000.70391 hours per JOB SETUP TIME

001.04683 hours per pistons to resurface

MT 075 Resurface 4" diameter x 8" long aluminum pistons by metal spraying. Set in lathe, pre-turn for undercut and finish turning to size.

000.70391 hours per JOB SETUP TIME

002.24679 hours per pistons to resurface

MT 076 Resurface 5" diameter x 10" long aluminum pistons by metal spraying. Set in lathe, pre-turn for undercut and finish turning to size.

000.70391 hours per JOB SETUP TIME

002.71925 hours per pistons to resurface

MT 077 Resurface 6" diameter x 12" long aluminum pistons by metal spraying. Set in lathe, pre-turn for undercut and finish turning to size.

000.70391 hours per JOB SETUP TIME

003.25452 hours per pistons to resurface

MT 078 Resurface 7" diameter x 14" long aluminum pistons by metal spraying. Machine on lathe to prepare and finish surface.

000.70391 hours per JOB SETUP TIME

003.15730 hours per pistons to resurface

MT 079 Resurface 8" diameter x 16" long aluminum pistons by metal spraying. Machine on lathe to prepare and finish surface.

000.70391 hours per JOB SETUP TIME

003.60737 hours per pistons to resurface

MT 080 Resurface 9" diameter x 18" long aluminum pistons by metal spraying. Machine on lathe to prepare and finish surface.

000.70391 hours per JOB SETUP TIME

004.07706 hours per pistons to resurface

Parts: Metal and Plastic; Fabricate
Operations include making of small parts and set up of necessary equipment.

TASK TIME STANDARDS LISTING

MT 024	4" O.D. X 12" long	CORE DRILL-mfg.from 11gage/saw	(Fabricate)
MT 020	1/2" X 3"	DOWEL PINS-from 1/2"drill rod	(Fabricate)
MT 033	1"-2"O.D.	PINS -stainless	(Fabricate)
MT 032	8" X 3"wide	FLAT BELT PULLEY	(Fabricate)
MT 030	1/2" X 16" X 20"	FLANGES for heat exhaust	(Fabricate) aluminum matl.
MT 036	6"O.D X 2" 80 tooth	SPUR GEAR	(Fabricate)
MT 031	4.5"O.D. X 25"	STEEL SHAFT	(Fabricate)
MT 022	2"O.D. X 6" long	BRASS IMPELLER& SHAFT	(Machine) centrifugal pump
MT 028	18"X24"X1/8"thk.	SET of 10 SIGNS	(Fabricate) shield shaped phenolic matl.
MT 027	3/8" X 11" X 6"-2ea.	ALUMINUM DUTCHMAN SPACERS	(Fabricate) for condensate pumps
MT 018	10" X 6" X 2"thk.	STRONGBACK-for boiler-tap hole	(Fabricate)
MT 021	3" X 1"	STANDARD NUT-mild steel	(Fabricate)
MT 026	1 1/4" X 1/2"	SAE NUT	(Fabricate) from 1-1/4"stainless hex stock
MT 025	12"	VALVE STEM from 2" naval brass	(Fabricate)
MT 029	6" O.D.	VALVE SEATS of air compressor	(Reface)

MT 024 Fabricate core drills 12" long from 4" OD x 11 gauge steel tubing on metal cutting band saw. Includes set up band saw.

000.34536 hours per JOB SETUP TIME

000.18065 hours per core drills to fabricate

MT 020 Fabricate dowel pins 1/2" x 3". Cut with hand hacksaw from 1/2" drill rod. Face ends to length on lathe. Includes set up time of engine lathe.

000.20259 hours per JOB SETUP TIME

000.47538 hours per dowel pins to fabricate

MT 033 Fabricate pins 2" OD x 1/4", 1-1/2" OD x 2-3/4", 1" OD x 3" with 2" of std. thread, drill 1/8" cutter hole from 2" stainless stock. Includes set up of power hacksaw, engine lathe, and drill press.

000.56109 hours per JOB SETUP TIME

001.49963 hours per pins to fabricate

MT 032 Fabricate one 8" flat belt pulley with 2" hole through center 1/4" keyway and four 1-1/2" stress holes. Material used 9" diameter x 3" C.I. blank. Includes set up of lathe, drill pres and arbor press.

004.28305 hours per flat belt pulleys to fabricate

MT 030 Fabricate 1/2" thick x 16" x 20" aluminum flange for heat exhaust from rough blanks. Includes drill bolt holes, band saw interior and exterior and set up machines.

000.30270 hours per JOB SETUP TIME

001.48820 hours per flanges to fabricate

MT 036 Fabricate one 80 tooth spur gear, 6" OD x 2" wide, 2" bore, 1/4" x 3" keyway, 1/4" tapped hole. Includes set up of machinery. Gear blank 7" OD x 2.5" fabricated from mild steel plate by others. Boss 3" OD x 1.25" fabricated and welded to blank by others.

012.46991 hours per 80 tooth spur gears to fabricate

MT 031 Fabricate one shaft 4.25" OD x 1", 3" OD x 20", 2" OD x 4", 2" std. thread x 2", 1/4" x 1/8" x 3" keyway, 3/16" diameter hole from 4-1/2" OD x 25" mild steel stock. Includes set up of power hacksaw, engine lathe, milling machine, drill press.

004.84980 hours per shafts to fabricate

MT 022 Machine two bearing surfaces, 2" OD x 6" length, on brass impellar and shaft assembly of centrifugal pump. Includes set up of engine lathe.

000.45733 hours per bearing surfaces to machine

MT 028 Fabricate ten 1/8" thick phenolic laminate for shield shaped signs (approx. 18" x 24"). Includes drill mounting holes, bolt together for multiple cutting, saw contour and set up machines. Done in multiples of 10 per set.

002.20247 hours per signs to fabricate in sets of 10

MT 027 Fabricate two 3/8" thick x 11" x 6" aluminum dutch man spacers for condensate pumps. Includes drill bolt holes, band saw interior and exterior contour and machine set ups.

001.51325 hours per dutch man spacers to fabricate

MT 018 Fabricate strongback 10" x 6" x 2" with one 1-1/8" tapped hole from boiler plate. Includes set up of drill press.

000.35850 hours per JOB SETUP TIME

000.30783 hours per strongbacks to fabricate

MT 021 Fabricate nut - 2" standard thread x 1" from 3" hexagon mild steel stock. Includes set up of power hacksaw and engine lathe

000.40181 hours per JOB SETUP TIME

001.19638 hours per nuts to fabricate

MT 026 Fabricate .75" x .5" SAE nuts from 1.25" stainless steel hexagon stock. Includes set up power hacksaw and engine lathe.

000.25344 hours per JOB SETUP TIME

000.59690 hours per nuts to fabricate

MT 025 Fabricate one 12" valve stem, 1" x 8" acme threads per inch single lead, 5/8" standard thread, from 2" naval brass bar stock. Includes set up of power hacksaw, engine lathe, and milling machine.

000.54855 hours per JOB SETUP TIME

001.25351 hours per valve stems to fabricate

MT 029 Reface six air compressor (1950 cfm at 100 psi) valve seats 6" OD on 16" engine lathe. Includes set up of lathe.

004.26045 hours per valve seats to reface in sets of six

Signs; Engrave.
This task covers the making of signs in the following ways:
Metal - Engrave with pantograph, finish and assemble to wood block. Wrap finished sign.
Thermoplastic - Engrave with pantograph, assemble to wood block and wrap.
Bakelite - Engrave with pantograph, prepare material, buff, wipe, file and wrap.

TASK TIME STANDARDS LISTING

MT 070 BAKELITE - (Engrave)
MT 071 METAL - (Engrave)
MT 072 THERMOPLASTIC - (Engrave)

EPS TASK TIME STANDARDS - DESCRIPTIONS AND UNIT HOURS

MT 070 Engrave bakelite signs. Use pantograph.

000.09291 hours per bakelite signs to engrave

MT 071 Engrave metal signs. Use pantograph.

000.06301 hours per metal signs to engrave

MT 072 Engrave thermoplastic signs. Use pantograph and assemble to wood block and wrap.

000.25224 hours per thermoplastic signs to engrave

Tools and Lawnmowers; Set, Sharpen, Repair.
Covers making blades and sharpening variety of saws. Includes sharpening handmowers (including dismantling), and sharpening blades and bedknives for power and gang mowers. Some repairs to blades included. Includes set up machines and special holding fixtures.

TASK TIME STANDARDS LISTING

MT 040	8ft6"	BANDSAW BLADE -		(Set & Sharpen)
MT 037	14ft0"	BANDSAW BLADES-	from coil stock cut, weld anneal and grind	(Fabricate)
MT 047	8ft6"	BANDSAW BLADE -	by machine	(Set Teeth)
MT 041	12ft	BANDSAW BLADE -		(Set & Sharpen)
MT 048	8"	CIRCULAR	SAW BLADE	(Handset & Sharpen)
MT 044	12"	CIRCULAR CUT-OFF	SAW BLADE	(Handset & Sharpen)
MT 039	14"	COMBO-CIRCULAR	SAW BLADE	(Set & Sharpen)
MT 038	26" -10pt.	HANDSAW	-	(Handset & Sharpen)
MT 045	26" - 8pt.	HANDSAW	-cross cut	(Handset & Sharpen)
MT 042	18"	LAWNMOWER BLADE		(Power Sharpen)
MT 043	20"	HANDMOWER		(Power Sharpener)
MT 046		HANDMOWER	sharpen,lube & adjust	(Service)
MT 081		POWER MOWER-reel & bedknife blade		(Sharpen)

MT 040 Set and sharpen one 8ft6" bandsaw blade, 6 teeth per inch. Machine set and sharpen.

000.48402 hours per bandsaw blades to set and sharpen

MT 037 Fabricate 14ft bandsaw blades from blade stock. Cut to length, weld and anneal butt joint and grind.

000.12311 hours per bandsaw blades to fabricate

MT 047 Set teeth on bandsaw blade by machine. Typical 8.5ft blade length.

000.11416 hours per bandsaw blades to set teeth on

MT 041 Set and sharpen one 12ft bandsaw blade 6 teeth per inch. Cut and weld blade after removing 6" section of damaged blade.

000.70723 hours per bandsaw blades to set and sharpen

MT 048 Hand set and sharpen 8" circular rip saw blades (36 teeth). Joint on power grinder using holding fixture.

000.41651 hours per circular rip saw blades to hand set and sharpen

MT 044 Hand set and sharpen one 12" circular cut-off saw blade by hand setting and filing (100 teeth). Joint on power grinder using holding fixture.

000.75443 hours per circular cut-off saw blades to hand set and sharpen

MT 039 Set and sharpen 14" combination circular saw blade by hand. Joint on power grinder using holding fixture.

001.07048 hours per combination circular saw blades to set and sharpen

MT 038 Hand set and sharpen one 26"-10 point saw. Clean with solvent to remove gums.

000.39312 hours per 10 point saws to hand set and sharpen

MT 045 Hand set and sharpen one 26"-8 point cross cut saw. Polish to remove pit marks and extra file to correct extreme dullness and damaged teeth.

000.76180 hours per 8 point cross cut saws to hand set and sharpen

MT 042 Sharpen one 18" hand lawnmower on power sharpener. Repair broken scrub bar by welding, disassemble, lubricate, adjust, assemble and inspect the mower.

001.02938 hours per hand lawnmowers to sharpen

MT 043 Sharpen one 20" hand mower on power sharpener. Repair broken spokes in six locations by welding. Retap four bedknife adjustment screw holes with hand tap.

001.42976 hours per hand mowers to sharpen

MT 046 Sharpen one hand lawnmower on power sharpener. Disassemble, lubricate, assemble, adjust and inspect the complete mower.

000.20508 hours per JOB SETUP TIME

000.04000 hours per hand lawnmowers to sharpen

MT 081 Sharpen reel and bed knife of power mower.

000.34851 hours per JOB SETUP TIME

000.04000 hours per inches of power mower reel and bed knife to sharpen

LOCKSMITH - repair and replace various locks

TASK TIME STANDARDS LISTING

MT 082	DOOR LOCK	(repin cylinder)
MT 083	COMBINATION SAFE	(change combination)
MT 084	KEY	(fabricate from sample)
MT 085	KEY	(fabricate from code)
MT 086	LOCK, DESK DRAWER	(replace)
MT 087	LOCK, METAL CABINET DOOR	(replace)

EPS TASK TIME STANDARDS - DESCRIPTIONS AND UNIT HOURS

MT 082 Remove lock from door, repin lock up to 12 pins and reinstall

000.07137 hours per lock

MT 083 Change safe combination to new numbers

000.07373 hours per lock

MT 084 Fabricate key by grinding to duplicate sample key

000.01300 hours per key

MT 085 Fabricate key from code with punch

000.01936 hours per key

MT 086 Replace desk drawer lock including picking lock to open desk

000.10439 hours per lock

MT 087 Replace lock in metal cabinet door - medical drug cabinet or similar with glass front - including adjusting door hinges

000.40824 hours per lock

Drill holes in various materials with hand held electric or air powered drill motor or with drill press

TASK TIME STANDARDS LISTING

NT 013	to 3/4"dia.to 1"deep	in BRASS or ALUMINUM	(power drill)
NT 014	to 3/4"dia.to 1"deep	in CAST IRON or BRONZE	(power drill)
NT 015	to 3/4"dia.to 1"deep	in STEEL	(power drill)
MT 019	to 1" dia. per in. dp.	in MILD STEEL plate	(drill press)
MT 023	to 1" dia. per in. dp.	in STAINLESS or TOOL STEEL	(drill press)
MT 035	to 1" dia. per in. dp.	in NON-FERROUS material	(drill press)

EPS TASK TIME STANDARDS - DESCRIPTIONS AND UNIT HOURS

NT 013 Drill hole in brass or aluminum up to 1 inch deep with portable power drill

000.04801 hours per drill

NT 014 Drill hole in cast iron or bronze up to 1 inch deep with portable power drill

000.05421 hours per drill

NT 015 Drill hole in steel up to 1 inch deep with portable power drill

000.07280 hours per drill

MT 019 Drill 1" diameter hole, 1" depth in mild steel plate. Includes set up of drill press.

000.20478 hours per JOB SETUP TIME

000.02256 hours per holes to drill

MT 023 Drill 1" diameter holes in stainless or tool steel 1" thick. Includes set up of drill press.

000.20478 hours per JOB SETUP TIME

000.03719 hours per holes to drill

MT 035 Drill 1" diameter hole in non-ferrous material. Includes set up of drill press.

000.20478 hours per JOB SETUP TIME

000.01585 hours per holes to drill

Compressors, Air; Disconnect and Install.
These tasks cover disconnecting for removal from site to shop and connecting, aligning, and test running installed units. Includes installing bolts. Does not include rigging, moving, special bed preparation, or initial piping or electrical work.

TASK TIME STANDARDS LISTING

NT 308	up to 10 H.P.	small- COMPRESSOR	(Disconnect)
NT 309	10 to 25 H.P.	med. - COMPRESSOR	(Disconnect)
NT 310	over 25 H.P.	large- COMPRESSOR	(Disconnect)
NT 311	up to 10 H.P.	small- COMPRESSOR	(Bolt Down & connect)
NT 312	10 to 25 H.P.	med. - COMPRESSOR	(Bolt Down & connect)
NT 313	over 25 H.P.	large- COMPRESSOR	(Bolt Down & connect)
NT 314	up to 10 H.P.	small- COMPRESSOR	(Install pad mounted)
NT 315	10 to 25 H.P.	med. - COMPRESSOR	(Install pad mounted)
NT 316	over 25 H.P.	large- COMPRESSOR	(Install pad mounted)

EPS TASK TIME STANDARDS - DESCRIPTIONS AND UNIT HOURS

NT 308 Disconnect small-sized stationary compressor (up to 10 HP) in preparation for transport to shop for repair. Does not include rigging or moving.

000.36646 hours per compressors to disconnect

NT 309 Disconnect medium-sized stationary compressor (10 to 25 hp) in preparation for transport to shop for repair. Does not include rigging or moving.

000.58401 hours per compressors to disconnect

NT 310 Disconnect large-sized stationary compressor (over 25 HP) in preparation for transport to shop for repair. Does not include rigging or moving.

000.94311 hours per compressors to disconnect

NT 311 Install small-sized stationary compressor (up to 10 HP). Includes bolt-down and connect. Does not include special bed preparation, rigging, moving, or initial piping and electrical work.

001.45807 hours per compressors to install

NT 312 Install medium-sized stationary compressor (10 to 25 hp). Includes bolt down and connect. Does not include special bed preparation, rigging, moving, or initial piping and electrical work.

001.92214 hours per compressors to install

NT 313 Install large-sized stationary compressor (over 25 HP). Includes bolt down and connect. Does not include special bed preparation, rigging, moving, or initial piping and electrical work.

002.78231 hours per compressors to install

NT 314 Install small pad-mounted stationary compressor (up to 10 HP). Includes level and connect. Does not include special bed preparation, rigging, moving, or initial piping and electrical work.

000.73088 hours per compressors to install

NT 315 Install medium-sized pad-mounted stationary compressor (10 to 25 HP). Includes level and connect. Does not include special bed preparation, rigging, moving, or initial piping and electrical work.

001.15626 hours per compressors to install

NT 316 Install large pad-mounted stationary compressor (over 25 HP). Includes bolt down and connect. Does not include special bed preparation, rigging, moving, or initial piping and electrical work.

001.90079 hours per compressors to install

COMPRESSORS,AIR- REPAIR
These tasks cover removing, disassembling, reassembling and installing for repairs. *4-cyl. = four-cylinder compressor; *1950 = 1950 CFM at 100 PSI; ammonia = ammonia compressor
Work ranges from simple installation to major overhaul.

TASK TIME STANDARDS LISTING

NT 019	*3-cyl.	-DISASSEMBLE-for inspection	(Disassemble)
NT 068	*4-cyl.	-DISASSEMBLE-completely	(Disassemble)
NT 069	*4-cyl.	-DISASSEMBLE & REASSEMBLE	(Disassy.& Reassy.)
NT 064	*4-cyl.	-COMPLETE ASSEMBLY	(Assemble)-complete unit
NT 038	*4-cyl.	-FAN WHEEL & SHROUD	(Remove)
NT 039	*4-cyl.	-FAN WHEEL & SHROUD	(Install)
NT 062	*4-cyl.	-VALVES-1st.2nd.3rd.4th.stage	(Remove,Disassy.Reassy.& Install)
NT 059	*4-cyl.	-VALVES 1st.&2nd.stage	(Remove,Disassy.,Reassy,Inst.)
NT 056	*4-cyl.	-VALVES-1st.&2nd.stage	(Remove,Disassy.,Clean, Inspect)
NT 048	*4-cyl.	-VALVES-1st.&2nd.stage	(Assemble & Install)
NT 047	*4-cyl.	-VALVES-3rd.&4th.stage	(Disassy.Clean& Inspect)
NT 052	*4-cyl.	-VALVES-3rd.&4th.stage	(Remove,Disassy.,Reassy. & Install)
NT 043	#4-cyl.	-OIL PUMP& RELIEF VALVE	(Remove,Disassy.,Reassy., & Install)
NT 045	*4-cyl.	-VALVE-auxiliary or constant speed unloader	(Remove& Disassy) or minimum pressure valve
NT 040	*4-cyl.	-VALVE-auxiliary or constant speed unloader	(Assy.&Install on) or minimum pressure valve
NT 063	*4-cyl.	-CRANKSHAFT	(Remove & Disassy.)
NT 061	*4-cyl.	-CONNECTING RODS	(Remove)
NT 055	*4-cyl.	-CONNECT RODS,OIL PUMP,SHAFT	(Install)
NT 042	*4-cyl.	-COMPRESSOR,SHIFTER & YOKE	(Remove)-from drive unit
NT 044	*4-cyl.	-COMPRESSOR,SHIFTER & YOKE	(Install)-to drive unit
NT 046	*4-cyl.	-CYLINDERS& GASKETS	(Install)-by bolting to crankcase
NT 058	*4-cyl.	-PISTONS-3ea.	(Remove)
NT 051	*4-cyl.	-PISTON,RODS,PINS,RINGS-4sets	(Assemble)

NT 041 *4-cyl. -CRANKSHAFT,ECCENTRICS,KEYS,BEARING SPACERS & BEARINGS (Assemble)
NT 067 *ammonia -COMPRESSOR SEALS (Disassy.,replace,assy)
.
NT 049 *1950 -BEARINGS;CRANKPIN & CROSSHEAD (Adjust)
NT 057 *1950 -CYL.HEAD,PISTON ASSY.,&3 VALVES (Remove)
NT 066 *1950 -CYL.HEAD,PISTON ASSY.,&3 VALVES (Remove & Install)
NT 050 *1950 -OIL WIPER RINGS (Remove & Reinstall)
NT 054 *1950 -PISTON ROD-end clearance (Adjust)
.
NT 060 *1950 -VALVES-6ea.discharge& inlet (Remove)
NT 053 *1950 -VALVES-6ea.discharge& inlet (Install)
NT 070 *1950 -VALVES-6ea.discharge& inlet (Remove & Install)
NT 065 *1950 -VALVES-6ea.discharge& inlet (Disassy.& Assy.)
NT 071 *1950 -VALVES-12ea.discharge& inlet (Remove & Install)

EPS TASK TIME STANDARDS - DESCRIPTIONS AND UNIT HOURS

NT 019 Disassemble 3 cylinder air compressor for inspection and overhaul.

001.15863 hours per air compressor to disassemble

NT 068 Completely disassemble 4-cylinder air compressor: Remove compressor from drive unit. Remove fan wheel, crankshaft and connecting rods. Disassemble crankshaft. Remove cylinders. Remove and disassemble 1st, 2nd, 3rd, 4th stage and other valves. Clean and inspect parts.

007.32939 hours per compressors to remove and disassemble

NT 069 Disassemble and reassemble 4-cylinder air compressor. Remove and disassemble all components. Clean, inspect, and reassemble Remove from and install to drive unit.

012.76685 hours per compressors to remove/install/disassemble/assemble

NT 064 Completely assemble 4-cylinder compressor: Assemble crankshaft. Install crankshaft and connecting rods, cylinders, 1st, 2nd, 3rd, 4th stage and other valves, and fan wheel. Install compressor to drive unit.

005.43746 hours per compressors to assemble and install

NT 038 Remove one fan wheel and shroud from 4-cylinder compressor.

000.34948 hours per fan wheels and shrouds to remove

NT 039 Install one fan wheel and shroud to 4-cylinder compressor.

000.47498 hours per fan wheels and shrouds to install

NT 062 Remove disassemble, reassemble and install 1st, 2nd, 3rd and 4th stage valves from 4-cylinder compressor. Clean and inspect parts. Remove and install inlet air filter and air heads.

003.46860 hours per compressor valves to remove and install (set of 4)

NT 059 Remove, disassemble, reassemble and install 1st and 2nd stage valves from 4-cylinder air compressor. Clean and inspect parts Remove and install inlet air filter and air heads.

002.60124 hours per 1st & 2nd stage compressor valves to remove and install

NT 056 Remove, disassemble, clean and inspect 1st and 2nd stage valves of four cylinder compressor. Remove inlet air filter and air heads.

001.60152 hours per 1st & 2nd stage compressor valves to remove and inspect

NT 048 Assemble and install 1st and 2nd stage valves of 4-cylinder compressor. Install inlet air filter and air heads.

000.99972 hours per 1st & 2nd stage compressor valves to assemble and install

NT 047 Disassemble, clean and inspect 3rd and 4th stage valves of 4-cylinder compressor.

000.56875 hours per 3rd & 4th stage compressor valves to disassemble,clean & inspc

NT 052 Remove, disassemble, reassemble, and install 3rd and 4th stage valves from four-cylinder air compressor. Remove and install air head. Clean and inspect parts.

000.86736 hours per 3rd & 4th stage compressor valves to remove and install

NT 043 Remove and disassemble or assemble and install one oil pump and one relief valve for 4-cylinder air compressor.

000.32000 hours per oil pumps and relief valve to remove or install

NT 045 Remove and disassemble one auxiliary valve or one constant speed unloader or one minimum pressure valve from 4-cylinder compressor. Clean and inspect parts.

000.36220 hours per auxiliary valves to remove and disassemble

NT 040 Assemble one auxiliary valve or one constant speed unloader, or one minimum pressure valve and install on 4-cylinder compressor.

000.15481 hours per auxiliary valve to assemble

NT 063 Remove and disassemble crank shaft from 4-cylinder compressor. Remove compressor from drive unit. Remove fanwheel, cylinders, pistons, piston rings and connecting rods. Clean and inspect parts.

003.17872 hours per crankshafts to remove and disassemble

NT 061 Remove connecting rods from 4-cylinder compressor. Remove compressor from drive unit. Remove fan wheel, cylinders, pistons, piston rings. Clean and inspect parts.

002.99874 hours per connecting rods to remove (set of 4)

NT 055 Install connecting rods on their eccentrics, assemble and install oil pump, and install crankshaft with rods to 4-cylinde compressor.

001.88012 hours per connecting rods/oil pumps/crankshafts to in stall (set of 4)

NT 042 Remove one 4-cylinder compressor, shifter, and yoke from drive unit.

000.26014 hours per compressors to remove

NT 044 Install one 4-cylinder compressor, shifter and yoke to drive unit.

000.28230 hours per compressors to install

NT 046 Install 4-cylinders and gaskets. Bolt to crankcase of 4-cylinder compressor. Depress rings with ring compressor.

000.39608 hours per cylinders and gaskets to install (set of 4)

NT 058 Remove four pistons and cylinders from 4-cylinder compressor. Remove 22 piston rings. Clean and inspect parts.

001.80480 hours per pistons and cylinders to remove (set of 4)

NT 051 Assemble four pistons, rods, pins, and rings for four-cylinder compressor. Check gap and clearance of 22 piston rings.

001.34406 hours per compressor pistons/rods/pins/rings to assem ble (set of 4)

NT 041 Assemble one crankshaft, eccentrics, keys, bearing spacers and bearings for 4-cylinder compressor.

000.18554 hours per crankshafts to assemble

NT 067 Disassemble and reassemble parts of ammonia compressor to replace seals. Remove and install cap, shields, armature, pulley, collar, flange, seals and oil box. Adjust during reassemble.

005.12525 hours per ammonia compressors to disassemble and reas semble

NT 049 Adjust one crankpin bearing and one crosshead bearing of air compressor. (1950 CFM at 100 lb. psi). Check operation after adjustment.

000.91221 hours per bearings to adjust and check operation of

NT 057 Remove cylinder head, piston assembly and three valves from air compressor (1950 CFM at 100 lb. psi). Two man team. Time for shut down not included.

002.06956 hours per cylinder heads/piston assemblies/valves to remove

NT 066 Remove and install cylinder head, piston and three valves of air compressor (1950 CFM at 100 lb. psi). Remove old and install two new piston rings. Clean and oil parts. Two man team. Tim for shut down not included.

004.88154 hours per cylinder heads/pistons/valves to remove and install

NT 050 Remove and reinstall three oil wiper rings (split type) on air compressor. (1950 CFM at 100 lb. psi). Clean and lubricate parts.

001.05848 hours per sets of wiper rings to remove and reinstall (set of 3)

NT 054 Adjust one piston-rod end clearance of air compressor. (1950 CFM at 100 psi). Use soft solder wire inserted through indicator holes to check clearance. Two man team. Time for shutdown not included.

001.40639 hours per piston-rod end clearances to adjust

NT 060 Remove six discharge and six inlet valves (complete assembly) from air compressor (1950 CFM at 100 lb. psi). Clean valve parts. Mark valves and valve covers for identification. Time for shut down not included.

002.73964 hours per discharge and inlet valves to remove and cl ean (set of 12)

NT 053 Install six discharge and six inlet valves to air compressor, (1950 CFM at 100 lb. psi). Install gaskets, valve covers, tubing, hold down bolts, and locknuts.

001.28766 hours per discharge and inlet valves to install (set of 12)

NT 070 Remove and install six discharge and six inlet valves of air compressor, (1950 CFM at 100 lb. psi). Disassemble and reassemble, reface six valves, clean ports and valves. Time fo securing compressor and hand lapping not included.

013.98136 hours per discharge and inlet valves to remove and in stall (set of 12)

NT 065 Disassemble and assemble six discharge or inlet valves removed from air compressor (1950 CFM at 100 lb. psi). Clean valves. Change channels and springs. Reface three valve discs on lathe. Travel time to and from shop to reface valves and time to handlap refaced valves not included.

004.76985 hours per discharge and inlet valves to disassemble/a ssemble (set of 6)

NT 071 Remove and install twelve discharge and twelve inlet valves on air compressor. (1950 CFM at 100 lb. psi). Includes dissasemble and reassemble, reface twelve valves, clean ports, valves. Time to secure compressor and hand lapping not included.

027.75554 hours per discharge and inlet valves to remove and in stall (set of 24)

These tasks include repairs to curtain and panel type roll-up doors common to the defense establishment. Times do not include rigging or moving of materials to and from job site.
*MC = metal curtain door ; *OP = overhead panel door

TASK TIME STANDARDS LISTING

NT 305	*OP	whole-DOOR	(Replace)	
NT 302	*OP	DAMAGED PANEL-1ea	(Replace)	2men
NT 299	*OP	ROLLERS-,1-3,	(Replace)	2men
NT 300	*OP	ROLLERS-,4-9,	(Replace)	2men
NT 294	*OP	SPRING-broken	(Replace)	2men
NT 307	*MC	JOB PREPARATION-at door site INCLDS.REMOVE& RPL.DUST COVER		
NT 306	*MC	JOB PREPARATION-at door site DUST COVER NOT REMOVED		
NT 303	*MC	DOOR	(Replace)	
		does not include rails,size to 16ft hiX 15ft wide		
NT 292	*MC	CURTAIN, DOOR	(Replace)	
			to 16ft hiX 15ft wide	
NT 304	*MC	DOOR	(Replace)	
		rails not included, size from 16-24ft hiX 15-25ft w		
NT 293	*MC	CURTAIN, DOOR	(Replace)	
			size from 16-24ft hiX 15-25ft w	
NT 286	*MC	DAMAGED BOTTOM-1/3 of door	(Replace)	2men
NT 289	*MC	DAMAGED BOTTOM-1/3 of door	(Replace slats)	
			size from 16-24ft hiX 15-25ft w	
NT 288	*MC	DAMAGED MIDDLE-1/3 of door	(Replace)	
			size to 16ft hiX 15ft wide	
NT 291	*MC	DAMAGED MIDDLE-1/3 of door	(Replace)	
			size from 16-24ft hiX 15-25ft w	
NT 287	*MC	DAMAGED TOP---1/3 of door	(Replace)	
			size to 16ft hiX 15ft wide	
NT 290	*MC	DAMAGED TOP---1/3 of door	(Replace)	
			size from 16-24ft hiX 15-25ft w	
NT 301	*MC	replace in TRACK & repair dent	(Repair)	2men
NT 296	*MC	LEVEL DOOR	(Repair)	2men
NT 084	*MC	DRIVE SHAFT-broken	(Replace)	2men
			electric chain drive	
NT 295	*MC/*OP	LIFT CHAINS or CABLES	(Replace)	
NT 297	*MC	DISASSEMBLE-for repairs	(Remove)	
			motor;transm;couplings;brake	
NT 298	*MC	all-DRIVE COMPONENTS	(Replace)	2men

motor;transm;brake;couplings

EPS TASK TIME STANDARDS - DESCRIPTIONS AND UNIT HOURS

NT 305 Remove existing door and replace with new overhead panel door; complete assembly (panels, chains or cables, springs and barrel drive and control units). Two man crew. Does not include drilling holes for bolts.

023.70078 hours per doors to remove old and install with new

NT 302 Replace damaged panel in overhead door. Does not include fabricating panel. Two man crew.

003.83317 hours per damaged panels to replace

NT 299 Replace rollers (1 through 3) on overhead panel doors. Two man crew.

001.97375 hours per rollers to replace

NT 300 Replace rollers (4 through 9) on overhead panel doors. Two man crew.

003.39455 hours per rollers to replace

NT 294 Replace broken spring on single or double spring door. Manual or electric. Two man crew with forklift truck and work pallet.

006.88345 hours per springs to replace

NT 307 Job preparation at door site, including remove and replace dust cover. Two man crew.

001.57847 hours per door sites to prepare

NT 306 Job preparation at door site; dust cover not removed. Two man crew.

001.02080 hours per door sites to prepare

NT 303 Remove old door and install new curtain door; complete assembly (curtain, cables or chains, controls, springs, barrel, etc.), t 16ft high and 15ft wide. Two man crew. Does not include rails

024.74017 hours per curtain doors to remove and install

NT 292 Replace entire curtain with new curtain; up to 16ft high & 15ft wide; manual or electric type roll-up door. Two man crew with forklift truck and work pallet.

008.44878 hours per door curtains to replace

NT 304 Remove old door and install new curtain door; complete assembly (curtain, cables or chains, controls, springs, barrel, etc.). From 16ft1" to 24ft high and 15ft1" to 25ft wide. Two man crew Does not include rails.

026.68287 hours per curtain doors to remove and install

NT 293 Replace existing curtain with new curtain; Manual or electric type roll-up door, 16ft1" to 24ft high and 15ft1" to 25ft wide. Two man crew with forklift truck and work pallet.

010.39149 hours per door curtains to replace

NT 286 Replace curtain on bottom third section (approximately) - manual or electric type roll-up door; up to 16ft high and 15ft wide.Tw man crew with forklift truck and work pallet.

006.46717 hours per door curtains to replace

NT 289 Replace curtain slats on bottom third section (approximately) of manual or electric type roll-up door. 16ft1" to 24ft high & 15ft1" to 25ft wide. Two man crew with forklift and work pallet

007.31698 hours per door curtain slats to replace

NT 288 Replace curtain on middle third section (approximately) - manual or electric type roll-up door; up to 16ft high x 15ft wide. Tw man crew with forklift truck and work pallet.

011.24609 hours per door curtains to replace

NT 291 Replace curtain on middle third section (approximately) of manual or electric type roll-up door. 16ft1" to 24ft high and 15ft1" to 25ft wide. Two man crew with forklift truck and work pallet.

014.08375 hours per door curtains to replace

NT 287 Replace curtain on top third section (approximately) - manual or electric roll-up type door; up to 16ft high and 15ft wide. Two man crew with forklift truck and work pallet.

008.13411 hours per door curtains to replace

NT 290 Replace curtain on top third section (approximately) of manual or electric roll-up type door. 16ft1" to 24ft high & 15ft1" to 25" wide. Two man crew with forklift truck and work pallet.

011.71356 hours per door curtains to replace

NT 301 Replace curtain in track and repair dent on overhead curtain door. Two man crew.

001.27819 hours per curtains to replace

NT 296 Level curtain door; two man crew.

002.91663 hours per curtain doors to level

NT 084 Replace broken drive shaft in overhead door electrical chain driven mechanism. Two man crew.

001.08911 hours per drive shafts to replace

NT 295 Replace two lift chains or cables on overhead door; Manual or electric; all sizes. Two man crew.

004.57651 hours per lift chains or cables to replace

NT 297 Remove motor, drive couplings, brake shoes, couplings or drive transmissions, etc. from door - work done in shop. Does not include moving to shop of electrical disconnect. Two man crew.

002.14501 hours per motors to remove

NT 298 Replace motor, drive couplings, brake shoes, couplings or drive transmission etc. in unit and reinstall unit to door. Does not include moving unit to door area or electrical reconnection. Two man crew.

002.68642 hours per motors to replace

Kitchen Equipment: Repair.
Includes remove, install and test operate.

TASK TIME STANDARDS LISTING

NT 023	recipro.	BREAD SLICER BLADE 1ea.	(Replace & Test Operate)
NT 031		BREAD SLICER BLADE set	(Replace & Test Operate) set of 32
NT 027	circular	MEAT SLICER BLADE 1ea.	(Replace & Test Operate)
NT 024		FRUIT & VEG.SLICER BLADE	(Rmv.,Grind,Install,Test)
NT 034	tray-	BUSHINGS-on ROTARY OVEN	(Rmv.,clean/lub,Instl,test)
NT 029	waterspray-	DISHWASHER MANIFOLD	(Remove & Reinstall)
NT 026		DISHWASHER	(Repair& Test)-remove obstruction from
NT 030		DISPOSAL SLINGER	(Remove& Reinstall)-in .5hp
NT 012	to 1/10 hp	EXHAUST FAN	(Install)-elec.hookup not incld.
NT 033	1ea	STEAM COOKER DOOR GASKET	(Replace)
NT 017	electricjet	STEAM COOKER	(Repair)
NT 025		TOGGLE SWITCH	(Replace)-on galley equip.
NT 028		GALLEY CART TIRE	(Remove& Install)-split rim

EPS TASK TIME STANDARDS - DESCRIPTIONS AND UNIT HOURS

NT 023 Remove, install and test operate, one reciprocating bread slicer blade.

000.12050 hours per bread slicer blades to remove and install

NT 031 Remove, install and test operate one set of 32 bread slicer blades.

001.80517 hours per sets of bread slicer blades to remove,install and test

NT 027 Remove, install and check operation of one circular meat slicer blade.

000.32419 hours per meat slicer blades to remove and install

NT 024 Remove, reinstall, check balance and alignment, for one hollow-ground rotary fruit and vegetable slicer blade.

000.12756 hours per fruit/vegetable slicer blades to remove and reinstall

NT 034 Remove, reinstall, clean, lubricate and test run three stabilizer arm bushings on rotary bake oven tray.

002.09881 hours per stabilizer arm bushings to remove/install/clean/etc.(set of 3)

NT 029 Remove and reinstall one water spray manifold on dishwashing machine.

000.71548 hours per manifolds to remove and reinstall

NT 026 Remove obstruction and test run, one automatic double-tank dishwashing machine.

000.20045 hours per dishwashing machines to test run

NT 030 Remove and reinstall slinger in one 1/2 HP garbage disposal unit. Disconnect waste pipe and wiring at motor terminals not included.

000.82270 hours per garbage disposal slingers to remove and reinstall

NT 012 Install small exhaust fan, up to 1/10 HP, in kitchen or restroom wall Does not include duct or electrical work. No Ladder time

000.26706 hours per fan

NT 033 Remove and install one gasket on door of 3-door steam cooker. Remove and install door, cut and cement gasket to door.

000.72224 hours per gaskets and doors to remove and install

NT 017 Repair electrical jet steam cooker.

001.11288 hours per electrical jet steam cookers to repair

NT 025 Remove and reinstall one toggle switch on galley equipment.

000.15097 hours per toggle switches to remove and reinstall

NT 028 Remove and install one split type wheel tire on galley cart. Clean, repack bearing and check operation.

000.49033 hours per galley cart wheels to remove and install

Hoists and Cranes: Remove, Install, Repair, Inspect.
These tasks include: removing, disassembling, reassembling and reinstalling equipment as listed.
3 ton capacity electric hoist; 5 ton capacity chain hoist;
25 ton overhead traveling crane

TASK TIME STANDARDS LISTING

NT 278	25ton O/H crane	TRUCK WHEEL 1@	(Replace,Lub,Inspect)
NT 284	25ton O/H crane	TRUCK WHEELS 4@	(Replace,Lub,Inspect)
NT 274	5ton chain	LOAD CHAIN& SHEAVE	(Disassy.Rpl.,Clean,Lub, Reassy.,Test)
NT 273	5ton chain	DRIVE PINION,BRAKE ASSY.,&LOAD CHAIN	(Disassy.& Reassy.)
NT 276	push/pull-type	HOIST TROLLEY	from-25ft h monorail-no instl *s(Rmv.,Disassy.,Clean)
NT 280	push/pull-type	HOIST TROLLEY	*s(Rmv./Service&Install)-to rail
NT 270	3ton elec. o/h	HOIST	(Remove& Reinstall)-to monorail 25'above floor
NT 285	3ton elec. o/h	COMPONENTS	(Disassy.Service,Reassy.) inclds.rmv & instl from rail not rig
NT 283	3ton elec. o/h	COMPONENTS	(Disassy.Service,Reassy.) does not incld.rehang& rig/cable
NT 282	3ton elec. o/h	COMPONENTS	(Reassy)-does not incld. instl.cable,block,hook or trolley
NT 277	3ton elec. o/h	ALL COMPONENTS	(Disassy.)
NT 281	3ton elec. o/h	HOIST	(Remove,Clean,Install)25ft to monorail
NT 272	3ton elec. o/h	GEAR& LOAD BRAKE	(Disassy.)previously rmvd hoist
NT 266	3ton elec. o/h	GEAR& LOAD BRAKE	(Remove or Reinstl.)
NT 279	3ton elec. o/h	GEAR& LOAD BRAKE	(Reassemble)
NT 263	3ton elec. o/h	BRAKE ASSY.solenoid	(Rmv.,Install,Test) already rmvd.from monorail
NT 264	3ton elec. o/h	MOTOR	(Disassemble)
NT 267	3ton elec. o/h	WINDING DRUM MECHANISM	(Disassemble)
NT 275	3ton elec. o/h	DRUM MECHANISM	(Reassemble) winding
NT 268	3ton elec. o/h	MOTOR	(Reassemble)
NT 265	3ton elec. o/h	MOTOR	(Remove or Reinstall)
NT 269	3ton elec. o/h	MOTOR	(Disassy.& Reassy.)

NT 278 Remove and reinstall one truck wheel on bridge of 25 ton overhead travelling crane. Jack up truck, remove and install rail scraper, gear cover, wheel bearing and inspect wheel and bearing.

001.76359 hours per crane truck wheels to remove and install

NT 284 Remove and reinstall four truck wheels on bridge of 25 ton overhead travelling crane. Remove and install wheels to and from crane platform. Includes inspect and lubricate wheels.

001.78027 hours per crane truck wheels to remove and reinstall

NT 274 Disassemble and reassemble chain hoist (5 ton capacity) to replace load chain and load sheave. Clean, lubricate, and check operation of hoist.

001.23800 hours per chain hoists to disassemble and reassemble

NT 273 Disassemble and reassemble chain hoist (5 ton capacity) to replace driving pinion, brake assembly, and load chain. Clean and oil parts. Check operation after repairs.

001.30877 hours per chain hoists to disassemble and reassemble

NT 276 Remove hoist-trolley (push or pull type)from monorail 25ft above floor. Use chainfall and ladder. Disassemble trolley in shop and clean parts. (Moving trolley to shop not included.)

001.49190 hours per hoist-trolleys to remove

NT 280 Remove and reinstall hoist trolley (push or pull type) from and to rail. Disassemble and reassemble trolley in shop. Clean parts, use chainfall, and ladder. Does not include moving trolley to shop.

002.98380 hours per hoist trolleys to remove and reinstall

NT 270 Remove and reinstall 6,000 pound capacity electric hoist from monorail 25ft above floor. Use chainfall and ladder. (Electrical connections excluded.)

000.65650 hours per electric hoists to remove and install

NT 285 Complete disassembly and reassembly of 6,000 pound capacity electric cable hoist. Includes remove and reinstall hoist on rail 25ft above floor using chainfall. Clean and lubricate parts. Does not include electrical connections or remove cable block, hook or trolley.

007.09207 hours per electric cable hoists to disassemble and re assemble

NT 283 Complete disassembly and reassembly of 6,000 pound capacity electric cable hoist. Clean and lubricate parts. Does not include removing hoist from rail, electrical connections, or removing cable, block, hook, or trolley.

006.43557 hours per electric cable hoists to disassemble and re assemble

NT 282 Complete reassembly of 6,000 pound electric cable hoist. Clean and lubricate parts. Electrical connections not included. Does not include installaing cable, block, hook or trolley.

004.50744 hours per electric cable hoists to reassemble

NT 277 Complete disassembly of 6,000 pound capacity electric cable hoist. Hoist previously removed to floor. Remove and disassemble motor, hoist gear and load brake assembly, and winding drum. Does not include remove cable, load block, hook, and trolley.

001.92813 hours per electric cable hoists to disassemble

NT 281 Remove and reinstall 6,000 pound capacity electric cable hoist and trolley from rail 25 feet above floor using chainfall. Includes disassemble and reassemble trolley in shop and clean parts. (Electrical connections excluded.)

003.64030 hours per electric cable hoists and trolleys to remov e and reinstall

NT 272 Disassemble hoist gear and load brake assembly previously removed from 6,000 pound capacity electric cable hoist. Unit already removed from hoist. Drain oil from gear case. Remove end enclosures, ratchet assembly, planetary gear assembly, driv shaft, bearings and seals.

000.77327 hours per hoist gears and load brake assemblies to di sassemble

NT 266 Remove or reinstall hoist gear and load brake assembly from 6,000 pound capacity cable hoist already removed from monorail.

000.31011 hours per hoist gears and load brake assemblies to re move or install

NT 279 Reassemble hoist gear and load brake for 6,000 pound capacity electric cable hoist. Reinstall seals, bearings, ratchet, planetary gear assembly, drive shaft, and end enclosure. Clean lubricate parts, and refill gear case. Does not include reinstall assembly to hoist.

002.10553 hours per hoist gears and load brakes to reassemble

NT 263 Remove or reinstall solenoid brake assembly for 6,000 pound capacity cable hoist already removed from monorail. (Electrical disconnection or reconnection not included.)

000.15796 hours per solenoid brake assemblies to remove or inst all

NT 264 Disassemble electric motor for 6,000 pound capacity cable hoist. Motor previously removed from hoist. Does not include electrical disconnection.

000.20458 hours per electric motors to disassemble

NT 267 Disassemble winding drum mechanism for 6,000 pound capacity cable hoist. Unit already removed from hoist. Cable, load block and hook already remove.

000.39852 hours per winding drum mechanisms to disassemble

NT 275 Reassemble winding drum mechanism for 6,000 pound capacity cable hoist. Clean and lubricate parts. Does not include reinstalling assembly to hoist.

001.39913 hours per winding drum mechanisms to reassemble

NT 268 Reassemble electric motor for 6,000 pound capacity cable hoist. Reinstall motor to hoist not included. Clean and lubricate parts.

000.45102 hours per electric motors to reassemble

NT 265 Remove or reinstall electric hoist motor from 6,000 pound capacity cable hoist. Hoist previously removed from monorail. (Electrical disconnections excluded.)

000.24165 hours per electric hoists to remove or install

NT 269 Disassemble and reassemble electric motor for 6,000 pound capacity cable hoist. Clean and lubricate parts. Does not include remove or reinstall motor to hoist.

000.65560 hours per electric motors to disassemble and assemble

Gaskets, Machine: Fabricate.
Make machine gaskets by scribe and hand snip or by peening out with hammer. Includes apply graphite to gasket and hollow punch bolt holes when made with scribe and hand snip.

TASK TIME STANDARDS LISTING

NT 022 to 2sq.ft. PIPE FLANGE GASKET- w/gasket gutter& hollow punch 4 holes & apply graphite
NT 032 to 2sq.ft. MACHINE GASKET-projected area: by scribe& hand snip, hollow punch 6 bolt holes & apply graphite
NT 036 > 2sq.ft. MACHINE GASKET-projected area: by scribe& hand snip, hollow punch 12 bolt holes& apply graphite
NT 035 to 2sq.ft. MACHINE GASKET-projected area: BALL PEEN hammer (Peen Method) method. Apply graphite to gaskets.
NT 037 > 2sq.ft. MACHINE GASKET-projected area: BALL PEEN hammer (Peen Method) method. Apply graphite to gaskets.

EPS TASK TIME STANDARDS - DESCRIPTIONS AND UNIT HOURS

NT 022 Manufacture pipe flange gasket (up to 2 square feet) with gasket cutter. Hollow punch bolt holes as required. Apply graphite t gasket.

000.19439 hours per pipe flange gaskets to manufacture

NT 032 Fabricate machine gasket up to 2 square feet mark projected area by scribe and hand snip. Hollow punch six bolt holes and apply graphite to gasket.

000.15777 hours per gaskets to fabricate

NT 036 Fabricate machine gasket over 2 square foot mark projected area by scribe and hand snip. Hollow punch 12 bolt holes and apply graphite to gasket and parts.

000.23624 hours per gaskets to fabricate

NT 035 Fabricate machine gasket up to 2 square foot mark projected area by peening out with ball-peen hammer. Apply graphite to gaskets

000.42504 hours per gaskets to fabricate

NT 037 Fabricate machine gasket over 2 square foot mark projected area by peening out with ball-peen hammer. Apply graphite to gaskets

000.45776 hours per gaskets to fabricate

Grinders, Surface & Tool: Repair.
Tasks cover surface (e.g. Blanchards) and cutter and tool grinders (e.g. Cincinnate #2). Repairs cover a variety of tasks to adjust, check out, repair, clean and oil parts.
*S = surface grinder ; *T = cutter & tool grinder

TASK TIME STANDARDS LISTING

NT 242	*S	SPLINDLE UNIT	(Remove or Install)
NT 262	*S	HEAD UNIT-from column	(Rmv.,Disassy.Repair,Assy.& Install)
NT 246	*S	HEAD UNIT	(Remove)-from column
NT 253	*S	HEAD UNIT	(Remove & Disassy.)from column
NT 256	*S	HEAD UNIT	(Assemble)
NT 249	*S	HEAD UNIT	(Install)-on column
NT 241	*S	FEED SCREW ASSY.	(Disassemble)-off machine
NT 251	*S	FEED SCREW ASSY.	(Remove)
NT 255	*S	FEED SCREW ASSEMBLE	(Install)
NT 261	*S	FEED SCREW ASSY.	(Remove & Install)
NT 254	*S	UPPER GEAR BOX	(Assemble)
NT 244	*S	UPPER GEAR BOX	(Remove or Install)
NT 260	*S	UPPER GEAR BOX	(Disassemble & Assemble)
NT 257	*S	CARRAGE,SLIDING TABLE& PARTS	(Remove & Install)
NT 252	*T	SPINDLE UNIT	(Remove & Install)-of cutter & tool grinder
NT 258	*T	HEAD & COLUMN & SPINDLE	(Remove & Install)
NT 247	*T	HEAD & COLUMN	(Remove or Install)
NT 250	*T	TABLE & TABLE SLIDE,CROSS FEED SCREW & SADDLE	(Remove or Install)
NT 245	*T	TABLE & TABLE SLIDE	(Remove or Install)-cutter & tool grinder
NT 243	*T	CROSS FEED SCREW & SADDLE	(Remove or Install)
NT 248	*T	CROSS FEED SCREW & SADDLE	(Remove & Install)
NT 259	*T	MAIN DRIVE BELT,TABLE SLIDE,CROSS FEED SCREW,SADDLE &SPINDLE	(Remove & Install)

NT 242 Remove or install spindle unit of surface grinder (Brown & Sharp #2). Unit equipped with anti-friction bearings.

000.25178 hours per spindle units to remove or install

NT 262 Remove head unit from column of surface grinder, disassemble head to repair; assemble head and install on column. (Blanchard #18). Includes adjustment and check-out. No scaffold or hoist-rigging time included.

004.34934 hours per head units to remove

NT 246 Remove head unit from column of surface grinder (Blanchard #18). Scaffold and hoist-rigging time not included.

000.47898 hours per head units to remove

NT 253 Remove head unit from column of surface grinder and disassemble head (Blanchard #18). No scaffold or hoist-rigging time included.

001.49575 hours per head units to remove

NT 256 Assemble head unit of surface grinder (Blanchard #18). Includes cleaning parts. No hoist-rigging time included.

001.95679 hours per head units to assemble

NT 249 Install head unit on column of surface grinder (Blanchard #18). Includes adjustment and check-out operations. No scaffold or hoist-rigging time included.

000.89680 hours per head units to install

NT 241 Disassemble feed screw assembly of surface grinder - assembly off machine. (Blanchard #18)

000.15928 hours per feed screw assemblys to disassemble

NT 251 Remove feed screw assembly of surface grinder (Blanchard #18). Includes removing head unit from column. No hoist-rigging or scaffold time included.

001.22667 hours per feed screw assemblies to remove

NT 255 Install feed screw assembly on surface grinder (Blanchard #18). Includes install head unit to column, adjust and check operations. No scaffold or hoist-rigging included.

001.88018 hours per feed screw assemblies to install

NT 261 Remove and install feed screw assembly of surface grinder (Blanchard #18). Includes disassembly and assembly of this component. Also, remove and replace head unit; oil parts and check-out operations. No scaffold or hoist-rigging time included.

003.95615 hours per feed screw assemblies to remove and install

NT 254 Assemble upper gear box of surface grinder (Blanchard #18). Includes feed adjustment. Remove or install gear box on machine is excluded.

001.65656 hours per upper gear boxes to assemble

NT 244 Remove or install upper gear box of surface grinder (Blanchard #18).

000.37604 hours per upper gear boxes to remove or install

NT 260 Disassemble and assemble upper gear box on surface (Blanchard #18). Includes remove and install box on machine; also feed adjustment.

003.67313 hours per upper gear boxes to disassemble and assemble

NT 257 Remove and install carriage, sliding table and parts of cross feed on surface grinder (Brown & Sharp #2). Includes clean and oil parts; also checking carriage operation.

002.24817 hours per carriages/sliding tables/etc. to remove and install

NT 252 Remove and install spindle unit of cutter and tool grinder (Cincinnati #2). Motor removed and installed.

001.13568 hours per spindle units to remove and install

NT 258 Remove and install head and column and the spindle from cutter and tool grinder (Cincinnati #2). Motor removed and installed.

002.02376 hours per heads and columns to remove and install

NT 247 Remove or install head and column of cutter and tool grinder (Cincinnati #2).

000.44404 hours per heads and columns to remove or install

NT 250 Remove or install table and table slide and cross feed screw and saddle from cutter and tool grinder (Cincinnati #3).

000.78740 hours per tables to remove or install

NT 245 Remove or install table and table slide from cutter and tool grinder (Cincinnati #2).

000.38325 hours per tables to remove or install

NT 243 Remove or install cross feed screw and saddle from cutter and tool grinder (Cincinnati #2).

000.20983 hours per cross feed screws to remove or install

NT 248 Remove and install cross feed nut, screw, and saddle of cutter and tool grinder (Cincinnati #2).

000.69443 hours per cross feed nuts/screws/etc. to remove and install

NT 259 Remove and install main drive belt, table slide, cross feed screw and saddle, and spindle unit of cutter and tool grinder. (Cincinnati #2). Includes clean and oil ways and spindle.

003.11626 hours per main drive belts to remove and install

Variable Speed Drive: Repair - type used on test stand
Covers U.S. Varidrive (15 H.P.) motors and controls or similar type. cont.V-spd.Dr. = continuously variable speed drive

TASK TIME STANDARDS LISTING

NT 077	cont.V-spd.Dr.	SPEED CONTROL BELT	(Remove & Install)
NT 073	cont.V-spd.Dr.	SPEED CONTROL BELT	(Remove)
NT 075	cont.V-spd.Dr.	SPEED CONTROL BELT	(Install)
NT 082	cont.V-spd.Dr.	DRIVE MOTOR	(Remove & Install)
NT 074	cont.V-spd.Dr.	DRIVE MOTOR	(Remove)
NT 080	cont.V-spd.Dr.	DRIVE MOTOR	(Install)
NT 072	cont.V-spd.Dr.	ELECTRIC SPEED CONTROL DEVICE	(Remove)
NT 076	cont.V-spd.Dr.	ELECTRIC SPEED CONTROL DEVICE	(Install) remote control
NT 078	cont.V-spd.Dr.	SPEED CONTROL DEVICE-remote	(Remove)
NT 079	cont.V-spd.Dr.	SPEED CONTROL BELT& ELECT.SPEED CONTROL DEVICE	(Remove)
NT 081	cont.V-spd.Dr.	SPEED CONTROL BELT& ELECT.SPEED CONTROL DEVICE	(Install)

EPS TASK TIME STANDARDS - DESCRIPTIONS AND UNIT HOURS

NT 077 Remove and install speed-control belt for continuously variable speed drive (U.S. Varidrive, 15 HP) used on test stand. Remove and install control case, shifting yoke, pulley half, and covers. Check operation of belt.

000.96527 hours per speed control belts to remove and install

NT 073 Remove speed-control belt from continuously variable speed drive (U.S. Varidrive, 15 HP) used on test stand. Remove covers, control case, shifting yoke, and pulley half.

000.40685 hours per speed control belt to remove

NT 075 Install speed-control belt on continuously variable speed drive (U.S. Varidrive, 15 HP) used on test stand. Install control case, shifting yoke, pulley half and covers. Check operation of belt.

000.55842 hours per speed control belts to install

NT 082 Remove and install drive motor for continuously variable speed drive (U.S. Varidrive, 15 HP) used on test stand. Remove and install covers, shifting yoke, and pulley half. Adjust and check speeds. (Electrical disconnection excluded).

001.61800 hours per drive motors to remove and install

NT 074 Remove drive motor from continuously variable speed drive (U.S. Varidrive, 15 HP) used on test stand. Remove covers, shifting yoke, and pulley half. (Electrical disconnection excluded).

000.49642 hours per drive motors to remove

NT 080 Install drive motor on continuously variable speed drive (U.S. Varidrive, 15 HP) used on test stand. Adjust and check speeds. (Electrical connections excluded).

001.12158 hours per drive motors to install

NT 072 Remove electric speed control device (remote control) from continuously variable speed drive (U.S. Varidrive, 15 HP) used on test stand. Remove gear case, control box, and covers. Install wheel. (Electrical disconnection excluded).

000.27955 hours per electric speed control devices to remove

NT 076 Install electric speed-control device (remove control) on continuously variable speed drive (U.S. Varidrive, 15 HP) used on test stand. Adjust and check speed settings. (Electrical connections excluded).

000.77857 hours per electric speed control devices to install

NT 078 Remove and install speed-control device (remote control) on continuously variable speed drive (U.S. Varidrive, 15 HP) used on test stand. Adjust and check speed settings. (Electrical connections excluded.)

001.05812 hours per speed control devices to remove and install

NT 079 Remove speed-control belt and electric speed control device (remove control) from continuously variable speed drive (U.S. Varidrive, 15 HP) used on test stand. Remove gear case, control box, and covers, instll wheel. Remove control case, shifting yoke and pulley half. (Electrical disconnection excluded.)

000.68640 hours per speed control belts/electric speed control devices to remove

NT 081 Install speed-control belt and electric speed-control device (remote control) on continuously variable speed drive (U.S. Varidrive, 15 HP) used on test stand. Install control case, gear case, control wheel, shifting yoke, pulley half, and covers. Check operation of belt. Adjust and check speed settings. (Electrical connections excluded).

001.33699 hours per speed control belts/electric speed control devices to install

Engine and Turret Lathes: Repair.
Covers removal, repair and reinstallation, clean, lubricate and filling with oil.

TASK TIME STANDARDS LISTING

NT 121	Turret	SPINDLE & BEARING	(Remove)
NT 127	Turret	SPINDLE & BEARING	(Remove & Replace)
NT 123	Turret	SPINDLE & BEARINGS	(Reinstall)
NT 113	Turret	FEED APRON	(Remove)-from carriage
NT 114	Turret	FEED APRONS	(Remove)-from carriage & saddle
NT 110	Turret	FEED ROD	(Remove)-from aprons & attachments
NT 108	Turret	FEED SELECTOR	(Install)-on carriage & saddle feed aprons
NT 122	Turret	SQUARE TURRET BEARING	(Rmv.Disassy.Clean, Lube,Reassy.& Inst.)
NT 118	Turret	CLUTCH SHAFT	(Remove)
NT 116	Turret	CLUTCH SHAFT	(Install)
NT 018	Engine	SERVICE	(Minor Repair/Adjust) Typical 16" lathe
NT 120	Engine	LEAD SCREW	(Remove & Install)
NT 115	Engine	LEAD SCREW	(Remove or Install)
NT 109	Engine	CROSS FEED SCREW	(Remove or Install)
NT 119	Engine	LATHE APRON	(Rmv.& Disassy.or Assy. & Install)
NT 124	Engine	LATHE APRON	(Rmv.,Disassy.,Reassy. Inst. w/clean&lube)
NT 112	Engine	LATHE APRON	(Remove or Install)
NT 117	Engine	TAILSTOCK SPINDLE SCREW	(Remove & Reinstall)
NT 111	Engine	MOTOR & DRIVE ASSY.	(Remove or Install) 5 hp motor

NT 121 Remove spindle and bearings, (universal ram type) turret lathe. Swing over ways 21-1/4". Chuck capacity 2" round maximum.

002.85541 hours per spindles and bearings to remove

NT 127 Remove and replace spindle and bearings, (universal ram type) turret lathe. Swing over ways 21-1/4". Chuck capacity 2" roun maximum. Filling with oil included. Pre-loading of bearings not included.

006.43297 hours per spindles and bearings to remove and replace

NT 123 Reinstall the spindle and bearings, (universal ram type) turret lathe. Swing over ways 21-1/4". Chuck capacity 2" round maximum.

003.57756 hours per spindles and bearings to reinstall

NT 113 Remove carriage feed apron, (universal ram type) turret lathe. Swing over ways 21-1/4". Chuck capacity 2" round maximum. 6,000 pound lathe.

000.86013 hours per carriage feed aprons to remove

NT 114 Remove carriage feed apron and saddle feed apron, (universal ram type) turret lathe. Swing over ways 21-1/4". Chuck capacity 2 2" round maximum. 6,000 pound lathe.

001.08671 hours per carriage feed aprons to remove

NT 110 Remove feed rod from aprons and attachments, (universal ram type) turret lathe. Swing over ways 21-1/4". Chuck capacity 2 round maximum.

000.43868 hours per feed rods to remove

NT 108 Install feed selector on carriage and saddle feed aprons on (universal ram type) turret lathe. Swing over ways 21-1/4". Chuck capacity 2" round maximum.

000.37882 hours per feed selectors to install

NT 122 Remove, disassemble, clean, lubricate, reassemble and install the square turret bearing and time the locking pin of a (universal ram type) turret lathe. Swing over ways 21-1/4". Chuck Capacity 2" round maximum.

002.93989 hours per square turret bearings to remove/clean/inst all/etc.

NT 118 Remove clutch shaft from (universal ram type) turret lathe. Swing over ways 21-1/4". Chuck capacity 2" round maximum. Includes draining of head stock oil.

001.66550 hours per clutch shafts to remove

NT 116 Install the clutch shaft of a (universal ram type) turret lathe. Swing over way 21-1/4". Chuck capacity 2" round maximum. Includes filling headstock with oil.

001.55080 hours per clutch shafts to install

NT 018 Minor repair and adjustment on typical 16" engine lathe. Includes set feed gear clearances; lube and adjust cross slide; and adjust clutch.

000.88420 hours per engine lathes to repair and adjust

NT 120 Remove and reinstall lead screw on 24" engine lathe (LeBlond Regal type) 7ft3" bed. Includes cleaning and lubricating lead screw.

001.93022 hours per lead screws to remove and install

NT 115 Remove or install lead screw, 24" engine lathe (LeBlond Regal type) 7ft3" bed.

000.87289 hours per lead screws to remove or install

NT 109 Remove or install cross feed screw, 24" engine lathe, (LeBlond Regal Type) 7'3" bed.

000.35404 hours per cross feed screws to remove or install

NT 119 Remove and disassemble apron or reassemble and install apron, 24" engine lathe (LeBlond Regal type) 7ft3" bed.

001.78455 hours per engine lathe aprons to remove or install

NT 124 Remove, disassemble, reassemble and install apron, 24" engine lathe (LeBlond Regal type) 7ft3" bed. Includes cleaning and lubrication.

004.57701 hours per engine lathe aprons to remove/disassemble/reassemble/install

NT 112 Remove or install apron, 24" engine lathe (LeBlonde Regal type) 7'3" bed.

000.75318 hours per engine lathe aprons to remove or install

NT 117 Remove and reinstall tailstock spindle screw, 24" engine lathe, (LeBlond Regal type) 7ft3" bed. Includes cleaning and lubrication.

001.39058 hours per tailstock spindle screws to remove and inst all

NT 111 Remove or install 5 HP motor and motor drive assembly, 24" engine lathe (Le Blond Regal type) 7'3" bed. Does not include electrical disconnection or connection.

000.52169 hours per motors and drive assemblys to remove or ins tall

Laundry Equipment: Repair.
This task covers miscellaneous repairs on laundry equipment. Includes cleaning, lubricating, adjusting and replacment of worn parts.

TASK TIME STANDARDS LISTING

NT 098	domestic washer	TUB BEARINGS & SEAL	(Replace)
NT 093	domestic washer	FRONT TUB	(Remove or Install)
NT 091	domestic dryer	BASKET BEARING	(Remove & Install)
NT 092	domestic dryer	BASKET	(Remove & Install)
NT 094	domestic dryer	BASKET,BEARING,BLOWER FAN ASSY.	(Replace)
NT 095	dry clean machine	GREASE SEALS	(Replace) on basket shaft
NT 097	laundry extractor	BASKET DRIVE PRESSURE PADS	on75lbs.cap. (Replace) basket
NT 090	laundry extractor	DRIVE V-BELTS	(Remove & Replace) .
NT 096	flatwork ironer	FEED RIBBONS (19)	(Replace)

EPS TASK TIME STANDARDS - DESCRIPTIONS AND UNIT HOURS

NT 098 Remove and install bearings and seals on back tub of domestic washer (Laundromat). Includes remove front and back tub, panels, door boot, level control hose, belts, sheaves, clamp ring and weights.

002.29470 hours per washer bearings and seals to remove and install

NT 093 Remove or install front tub from domestic washer (Laundromat). Remove or install panels, door boot, level control, drain hose, belts, sheaves, clampring and weight.

000.91185 hours per washer tubs to remove or install

NT 091 Remove and install basket bearing domestic clothes dryer (Aldry). Remove and install panels, belt and pulley. Clean, lubricate, adjust and operate.

000.52899 hours per dryer basket bearings to remove and install

NT 092 Remove and install basket in domestic clothes dryer (Aldry). Remove and install panels, belt, pulley, cross rails, clips and front tub.

000.58135 hours per dryer baskets to remove and install

NT 094 Remove and install basket, bearing and blower fan assembly domestic clothes dryer (Aldry). Remove and install panel, belt and pulley. Clean, lubricate, adjust and operate after repair.

001.16736 hours per dryer basket/bearing/blower fan assembly to remove and install

NT 095 Remove and replace four grease seals on basket shaft of dry cleaning machine. Remove and install cover plate, belt guard, belts, hub cap, pulley, washers, spacers, and pillow blocks. Fabricate two holding studs. Clean and lubricate parts.

001.62651 hours per grease seals to remove and replace (set of 4)

NT 097 Remove and install basket drive pressure pads of 30" laundry extractor 75 pounds dry weight capacity. (3 HP, 30" Hoffman). Remove and install drive belts, safety top, shaft-basket assembly, clean parts, and check operation after repairs.

002.03443 hours per basket drive pressure pads to remove and in stall

NT 090 Remove and replace two drive V-belts to 30" laundry extractor (30" Hoffman 3 HP). Adjust to proper belt tension.

000.39616 hours per drive V-belts to remove and replace (set of 2)

NT 096 Remove and install 19 feed ribbons in 50" flatwork ironer (American Laundry). Remove and install bib apron, drag bar, panels, finger guard, bearing cover, bearing, retainer, and fee board. Clean and lubricate parts. Adjust ribbon tension and check operation of ironer.

001.98342 hours per feed ribbons to remove and install (set of 19)

Machinery; Level and Align (Non-Optical Alignment).
Covers various alignment, leveling and testing techniques.
Radial arm saw; turret lathe, universal ram turret lathe.

TASK TIME STANDARDS LISTING

NT 100	5hp. motor	SPEED REDUCER	(Align) w/flexible coupling
NT 105	boiler blower	ELECTRIC MOTOR 50 hp	(Align & Install) .
NT 099	radial arm saw	SAW TABLE	(Align)-table top parallel to arm
NT 101	UnivRamTurret	TURRET LATHE	(Align & Level)
NT 102	UnivRamTurret	STOCK FEED CHUCK & BARFEED	(Align & Level)
NT 107	UnivRamTurret	LATHE, STOCK FEED CHUCK & BARFEED	(Align & Level)
NT 103	UnivRamTurret	TURRET LATHE	(Precision Align)
NT 106	UnivRamTurret	LATHE	(Precision Align) by test cuts)
NT 104	UnivRamTurret	LATHE	(Level)

EPS TASK TIME STANDARDS - DESCRIPTIONS AND UNIT HOURS

NT 100 Align 5 HP motor and speed reducer having flexible coupling (Steelflex). Check shaft end spacing, angular and parallel alignment. Refill with coupling grease.

000.81751 hours per motors and speed reducers to align

NT 105 Install, align and set one 50 HP motor to boiler draft blower. Drill and ream for dowels. Use shims, indicators, and fill coupling with oil. Electrical connection not included.

005.21797 hours per motors to install and align

NT 099 Align table top parallel to arm of radial arm wood saw by adjusting jacknuts (Dewalt model GE 5 HP motor). Remove and reinstall saw blade, steel indicator bar, and blade guard.

000.88557 hours per radial arm saws to align

NT 101 Parallel align and level 4900 lb. universal ram type turret lathe (No. 5 Warner & Swasey). Machine already placed. 20" swing over bed. Chuck capacity 2-1/4" round maximum. Use spirit level and leveling set screws.

002.06954 hours per turret lathes to parallel align and level

NT 102 Level and align the stock feed chuck and the bar feed, universal ram type turret lathe (newly installed). Weight approximately 6,000 pounds. Swing over ways 21-1/4". Chuck capacity 2" round maximum.

002.70519 hours per turret lathe stock feed chucks/bar feeds to level and align

NT 107 Level a newly installed ram type turret lathe. Level and align the stock feed chuck and the bar feed. Precision align by taking test cuts from the carriage. 6,000 pound lathe. Swing over ways 21-1/4". Chuck capacity 2" round maximum. Pre-run machine to stabilize at operating temperatures.

009.70302 hours per new turret lathes to level and precision align

NT 103 Precision align ram type turret lathe after preliminary alignment. Align by test cuts from the carriage. 6000# lathe, 21-1/4" swing over ways. 2" maximum round chuck capacity. Pre-run machine to stabilize at operating temperature.

003.50686 hours per turret lathes to precision align

NT 106 Level a newly installed ram type turret lathe and precision align by taking test cuts from the carriage. 6,000 pound lathe Swing over ways 21-1/4". Chuck capacity 2" round maximum. Pre-run machine to stabilize at operating temperature.

006.99783 hours per new turret lathes to level and precision align

NT 104 Level a newly installed universal ram type turret lathe. Weight approximately 6,000 pounds. Swing over ways 21-1/4". Chuck capacity 2" round maximum. Insert eight steel floor plates and level rails in sequence.

003.49097 hours per new turret lathes to level

Machinery and Equipment (Miscellaneous); Repair.
Covers removing and installing as necessary.

TASK TIME STANDARDS LISTING

NT 158	air operated chuck	AIR FILTER & AIR LUBRICATOR	(Replace)
NT 165	90psi.air line	FILTER & LUBRICATOR	(Disassemble & Assemble)
NT 159	90psi.air line	PRESSURE GUAGE & REGULATOR	(Replace)
NT 163	90psi.air line	AIR PRESSURE REGULATOR	(Disassemble & Assemble)
NT 157	radial arm wood saw	GUARD & SAW BLADE	(Replace)
NT 160	radial arm wood saw	ROLLERS OF MOTOR CARRIAGE	(Remove)
NT 164	radial arm wood saw	ROLLERS & MOTOR CARRIAGE	(Install)
NT 166	radial drill press	SPINDLE & QUILL	(Rmv.& Disassy.)
NT 170	radial drill press	SPINDLE & QUILL	(Rmv.Disassy.Clean, Lube,assy.& Install)
NT 171	radial drill press	SPINDLE & SLEEVE	(Replace)
NT 173	radial drill press	FRICTION DRIVE CLUTCH	(Replace)
NT 016	horz. boring mach.	SPINDLE BRAKE	(Repair)
NT 020	electric motor	BEARINGS for 40hp 3phase	(Replace)
NT 172	arc welding motor/gen.	BEARINGS	(Replace)
NT 174	#5 oil burner	SHAFT BEARINGS	(Replace)
NT 083	woodcutting bandsaw	BLADE TIRES	(Replace)
NT 167	single disc clutch	FRICTION PLATES	(Replace)
NT 175	five disc clutch	FRICTION PLATES	(Replace)
NT 168	hydraulic hacksaw	PACKING SHIMS-in 2 cylinders	(Install)
NT 162	hydraulic hacksaw	FEED UNIT	(Replace)
NT 161	wire stich machine	CUTTER	(Replace)
NT 169	sandmixer	COMBING BELT	(Replace)
NT 271	forklift truck	AXLE-in shop	(Repair)
NT 085	power turret punch	PUNCH & DIE SETS	(Replace)

NT 158 Remove and install air filter and air lubricator in 90 lb. psi compressed air line to air operated chuck.

000.26126 hours per air filters to remove and install

NT 165 Disassemble and assemble air filter and air lubricator. Clean and inspect parts.

001.19109 hours per air filters and air lubricators to disassemble and assemble

NT 159 Remove and install air pressure gauge and air pressure regulator in 90 lb. psi compressed air line.

000.39448 hours per air pressure gauges and regulators to remove and install

NT 163 Disassemble and assemble air pressure regulator. Clean and inspect parts.

000.78262 hours per air pressure regulators to disassemble and assemble

NT 157 Remove and install guard and saw blade of radial arm wood saw; (Dewalt model GE - 5 HP motor - medium arm size).

000.44161 hours per guards and saw blades to remove and install

NT 160 Remove rollers of motor carriage from radial arm wood saw; (Dewalt model GE - 5 HP motor - medium arm size). Clean and inspect rollers and tracks.

000.53542 hours per rollers to remove (1 set)

NT 164 Install rollers and motor carriage to radial arm wood saw. (Dewalt model GE - 5 HP motor - medium arm size). Adjust rollers to tracks and check.

000.99941 hours per rollers and motor carriages to install

NT 166 Remove and disassemble spindle and quill of radial drilling machine, (3ft arm and 7" column). Clean and lubricate.

001.30357 hours per spindles and quills to remove and disassemble

NT 170 Remove, disassemble, clean, lubricate, reassemble, and reinstall spindle and quill of radial drilling machine, (3ft arm and 7" column).

001.81322 hours per spindles and quills to remove/disassemble/clean/etc.

NT 171 Remove and install spindle and sleeve of a Cincinnati Bickford 19" diameter column radial drill press. Drain and fill crankcase with oil.

001.87322 hours per spindles and sleeves to remove and install

NT 173 Remove and install friction drive clutch of a Cincinnati Bickford 19" diameter column radial drill press. Drain and fil clutch case with oil. Clean parts. Adjust clutch. Three man crew.

002.02719 hours per friction drive clutches to remove and insta ll

NT 016 Repair spindle brake on horizontal boring machine.

001.04893 hours per spindle brakes to repair

NT 020 Remove and install motor bearings in 40 H.P. three phase electric motor.

001.03999 hours per motor bearings to remove and install

NT 172 Remove and install bearings of 300 AMP arc welding, motor-generator set. Lubricate bearings. Check operation.

002.09167 hours per bearings to remove and install

NT 174 Remove and install bearings on burner shaft of horizontal rotary No. 5 oil burner (Superior Combustion). Remove and install belt. Disassemble and assemble fan housing. Clean and inspect parts.

003.29932 hours per bearings to remove and install

NT 083 Replace worn tires on woodcutting bandsaw. Includes remove and replace blade, wheels, guides, small table and head.

005.05469 hours per worn tires to replace (set of 2)

NT 167 Remove and install friction plates from Bliss type "K" single disc clutch. Clean clutch. Check operation.

001.36293 hours per friction plates to remove and install

NT 175 Remove and install friction plates from Bliss type "K" five-disc clutch. Clean clutch. Check operation.

004.37449 hours per friction plates to remove and install

NT 168 Install hydraulic cylinder packing shims in two cylinders of hydraulic hacksaw. Replenish hydraulic oil and adjust variable feed indicator.

001.38018 hours per packing shims to install

NT 162 Remove and install feed unit for hydraulic hacksaw. Disconnect and connect oil intake and exhaust lines. Adjust variable feed indicator.

000.66683 hours per feed units to remove and install

NT 161 Remove and install cutter from wire stitching machine (Bostitch Bliss). Adjust and check after repair.

000.64095 hours per cutters to remove and install

NT 169 Remove and install "Combing Belt", Royer model NC-2 sandmixer. Adjust V-belt and sweep fingers.

001.53372 hours per Combing belts to remove and install

NT 271 Repair forklift axle in shop - includes disassembly, manufacture new bushings, assemble, grease and test operation.

016.47955 hours per forklifts to repair

NT 085 Replace worn punch and die sets in power turret metal punch.

001.82728 hours per punch and dies sets to replace

Milling Machine, Plain & Universal: REPAIR
Covers variety of repairs to milling machines & their components
Removing & installing parts, cleaning, lub,inspect, gauging,etc.
plain milling machines and universal milling machines

TASK TIME STANDARDS LISTING

NT 125	Plain or Univ.	ELEC.MOTOR 1hp	(Remove)
NT 131	Plain or Univ.	ELEC.MOTOR 1hp	(Install)
NT 138	Plain or Univ.	DRIVE UNIT & MOTOR MOUNT	(Remove & Disassy.) disassy.drive unit only
NT 140	Plain mill	ELEC.MOTOR-10hp	(Remove or Install)
NT 149	Plain mill	PULLEY & CLUTCH ASSY.,BRACKET & BEARINGS	(Remove & Install)
NT 143	Plain mill	TABLE	(Remove or Install)
NT 152	Plain mill	TABLE & LEAD SCREW NUT-on saddle	(Remove & Install)
NT 151	Plain mill	TABLE	(Remove & Install)
NT 155	Plain mill	TABLE LEAD SCREW & NUT,& SPEED GEAR BOX	(Remove & Install)
NT 130	Plain mill	LEAD SCREW	(Adjust Backlash)
NT 128	Plain mill	TABLE TRIP MECHANISM	(Assemble or Disas.)
NT 137	Plain mill	SPEED GEAR BOX	(Remove or Install)
NT 142	Plain mill	SPEED GEAR BOX	(Remove & Install)
NT 132	Plain mill	TABLE LEAD SCREW NUT	(Remove or Install)
NT 139	Univ. mill	DRIVE UNIT & MOTOR MOUNT	(Assemble & Install)
NT 147	Univ. mill	PULLEY SHAFT & DRIVING CLUTCH	(Remove & Install)
NT 154	Univ. mill	DRIVE & PULLEY SHAFTS,& DRIVING CLUTCH	(Remove & Install)
NT 148	Univ. mill	SPINDLE	(Rmv.,Clean,oil, adjust,Install)
NT 144	Univ. mill	CUTTING FLUID PUMP	(Remove & Install)
NT 129	Univ. mill	PULLEY or CHAIN GEAR BRKT	(Remove)
NT 134	Univ. mill	FEED BOX UNIT	(Remove & Install)
NT 153	Univ. mill	FEED BOX	(Rmv.Disassy.Assy.Instl)
NT 145	Univ. mill	TABLE,LEAD SCREW & NUT	(Rmv.Disassy.Assy.Inst)
NT 141	Univ. mill	TABLE	(Install,Clean, Oil, check Operation)
NT 135	Univ. mill	LEAD SCREW & NUT	(Inspect)

			(Rmv. table to inspect)
NT 136	Univ. mill	GEAR SHIFTER BRACKET	(Rmv. & Install)
NT 133	Univ. mill	LEAD SCREW & NUT	(Assemble & Install)
NT 126	Univ. mill	LEAD SCREW & NUT	(Remove & Disassy.)
NT 146	Univ. mill	HOUSING UNIT TABLE & LEAD SCREW & NUT	(Remove & Install)
NT 150	Univ. mill	SADDLE& CROSS FEED SCREW,HOUSING UNIT, LEAD SCREW NUT & TABLE	(Remove & Install)
NT 156	Univ. mill	KNEE UNIT,SADDLE,CROSS FEED LEAD SCREW & NUT, TABLE NUT	(Remove & Install)

EPS TASK TIME STANDARDS - DESCRIPTIONS AND UNIT HOURS

NT 125 Remove a 1 HP electric motor from a milling machine. Electrical disconnection not included.

000.06307 hours per motors to remove

NT 131 Install a 1 HP electric motor on a milling machine. Electrical connection not included. Install pulley and belt.

000.19892 hours per motors to install

NT 138 Remove drive unit and motor mount from milling machine and disassemble drive unit. Inspect and gauge race, bushing and housing (Drive 1 HP capacity).

000.71121 hours per drive units and motor mounts to remove

NT 140 Remove or install 10 HP motor on milling machine. (Milwaukee Model K). Does not include electrical disconnect or connect.

000.80588 hours per motors to remove or install

NT 149 Remove and install pulley and clutch assembly, bracket and bearings. Clean parts, check and adjust. (Milwaukee Model K).

002.53612 hours per pulleys/brackets/bearings to remove and install

NT 143 Remove or install table (Milwaukee Model K plain).

001.39756 hours per tables to remove or install

NT 152 Remove and install table and the lead screw nut on saddle. Clean, wash and oil parts. Adjust lead screw backlash. (Milwaukee Model K).

003.85301 hours per tables to remove and install

NT 151 Remove and install table. Check and inspect lead screw; clean wash, and oil parts. (Milwaukee Model K).

003.29274 hours per tables to remove and install

NT 155 Remove and install table, lead screw and nut, and speed gear box. Clean, oil, adjust and check operation (Milwaukee Model K)

005.26479 hours per tables to remove and install

NT 130 Adjust lead screw backlash (Milwaukee Model K plain).

000.19488 hours per lead screws to adjust

NT 128 Assemble or disassemble table trip mechanism (Milwaukee Model K Plain). Install or remove dowel, lever, taper pin, bushing, shaft, plug, spring, link, and lever detent.

000.14084 hours per table trip mechanisms to assemble or disass emble

NT 137 Remove or install speed gear box assembly (Milwaukee model K 10 HP). Remove or install hole plug in casting, special liftin bolts, and lift to or from shop truck.

000.56369 hours per speed gear box assemblies to remove or inst all

NT 142 Remove and install speed gear box assembly. Check operation. (Milwaukee Model K).

001.29438 hours per speed gear box assemblys to remove and inst all

NT 132 Remove or install table lead screw nut on saddle (Milwaukee Model K Plain). Remove or install set screws, yoke and table nut. Clean nut.

000.17352 hours per table lead screw nuts to remove or install

NT 139 Assemble and install drive unit and motor mount to milling machine. Drive 1 HP capacity. Install pins, shafts, snap rings, roller bearings, cluster pulley, and collar.

000.69618 hours per drive units and motor mounts to assemble an d intstall

NT 147 Remove and install pulley shaft and driving clutch. Wash and oil clutch assembly. (Cincinnati Model M universal). Refill machine column with lubricating oil.

002.43938 hours per pulley shafts and driving clutches to remov e and install

NT 154 Remove and install drive shaft, pulley shaft and driving clutch, pulley or chain gear bracket, and gear shifter bracket. Disassemble and assemble drive shaft; inspect and gauge gears. (Cincinnati Model M universal).

005.10613 hours per drive shafts to remove and install

NT 148 Remove and install spindle, clean, oil and adjust. (Cincinnati Model M).

002.70292 hours per spindles to remove, install, clean, oil and adjust

NT 144 Remove and install cutting fluid pump; disassemble and assemble pump. (Cincinnati Model M universal).

001.66936 hours per cutting fluid pumps to remove and install

NT 129 Remove pulley bracket or chain gear bracket (Cincinnati Model M Universal). Drain oil from machine column.

000.17416 hours per pulley brackets to remove

NT 134 Remove and install feed box unit (Cincinnati Model M Universal). Remove and install screws, lock spring, telescopic tube and fee box unit.

000.38438 hours per feed box unit to remove and install

NT 153 Remove and install feed box; disassemble and assemble feed box unit. Clean and oil. (Cincinnati Model M universal).

004.61332 hours per feed boxes to remove and install

NT 145 Remove and install table, lead screw and nut; disassemble and assemble lead screw and nut. (Cincinnati Model M plain). Clean and oil parts.

001.90478 hours per tables/lead screws/nuts to remove and install

NT 141 Install table, clean, oil and check operation. (Cincinnati Model M).

001.00752 hours per tables to install, clean, oil and check operation

NT 135 Remove table to inspect lead screw and nut (Cincinnati Model M). Remove hand feed crank, dial, pin, clutch sleeve, apron sides, gib, and bearing.

000.46717 hours per tables to remove to inspect lead screw and nut

NT 136 Remove and install gear shifter bracket (Cincinnati Model M Universal). Remove and install screws, lock spring, telescopic tube and vertical feed shaft.

000.49182 hours per gear shifter brackets to remove and install

NT 133 Assemble and install lead screw and nut (Cincinnati Model M). Clean and oil nut, screw, and inside of bracket.

000.32485 hours per lead screws and nuts to assemble and instal l

NT 126 Remove and disassemble lead screw and nut (Cincinnati Model M).

000.10524 hours per lead screws and nuts to remove and disassem ble

NT 146 Remove and install housing unit, table, and lead screw and nut; disassemble and assemble leadscrew and nut. (Cincinnati Model Universal) clean and oil.

002.20919 hours per housing units to remove and install

NT 150 Remove and install saddle and cross feed screw, housing unit, lead screw nut and table. Clean and oil. (Cincinnati Model M Universal).

003.25368 hours per saddle and cross feed screws to remove and install

NT 156 Remove and install knee unit, saddle and cross feed screw, housing unit, lead screw and nut, and table unit.

005.14701 hours per knee units/saddle & cross feed screws to re move and install

Pumps & Pumping Units: REPAIR
These tasks cover various types of pumps & pump functions.
*sump = sump pump ; *centri = centrifugal pump ; *conden = condensate pump ; *dpwell = deep well pump ;*fire = fire pump; *rotary = rotary pump ; *CONTINUED
*sewage = centrifugal sewage pump ; *circul = circulating pump
*tank = tank pump multi bowl

TASK TIME STANDARDS LISTING

NT 213	*fire-1000gpm	PUMP	(Disassy.& Assy.)
NT 202	*fire-1000gpm	PUMP	(Disassemble)
NT 212	*fire-1000gpm	PUMP	(Assemble)
NT 191	*centri-portable	SUCTION CHECK VALVE	(Remove & Install)
NT 194	*centri-portable	CK VALVE & IMPELLER	(Remove & Install)
NT 201	*centri-portable	SHAFT SEAL & GREASE RETAINER	(Remove & Install)
NT 197	*centri-portable	SHAFT SEAL	(Remove & Install)
NT 207	*centri-90gpm	PUMP,TOP CASING & GASKET	(Rmv.&Instl., Disassy.& Assy.)
MT 022	*centri	IMPELLER & SHAFT ASSY.	(Machine 2 wearing surfaces)
NT 190	*centri-1stage	BEARING HOUSING COVERS	(Remove & Install)
NT 210	*centri-1stage	WEAR RINGS or BEARINGS	(Replace)rmv.& inst. shaft & impeller
NT 021	*centri-sewage	PACKING/MECHANICAL SEAL	(Rmv.&Replace w/ mech.seal)
NT 089	*sewage-lift	OVERHAUL-pump	(Disassy.,Overhaul, Inspect)
NT 209	*rotary-300 gpm	PUMP	(Remove & Install) from base
NT 192	*rotary	HOUSING	(Remove & Install)
NT 195	*rotary	SHAFT SEAL OR BEARING	(Remove & Install)
NT 196	*rotary	STUB SHAFT BUSHING & ROTOR HOUSING	(Remove & Install)
NT 189	*circul	HOT WATER PUMP	(Remove)fraction hp
NT 193	*circul	MOTOR,SHAFT,SEAL or IMPELLER	(Remove & Install)
NT 199	*conden-200gpm	PACKING & BALL BEARINGS	(Replace)
NT 087	*conden	PUMP,PACKING,COMPONENTS	(Rmv.Inst.,Repair)

NT 086	*conden	FLOAT & SWITCH	(Repair)
NT 203	*conden-2stage	PUMP	(Disassy.& Assy.)
NT 211	*conden*centri	PUMP 2stage	(Remove & Install)
NT 208	*dpwell	MOTOR UNIT,PUMP COLUMN-1sect. & DISCHARGE PIPE	(Remove & Install)
NT 214	*dpwell-8"	PUMP,4 COLUMN SECT.	(Remove & Install)
NT 206	*dpwell-8"	PUMP -8" multi bowl	(Assemble)
NT 088	*dpwell-12"	PUMP	(Assemble) in shop
NT 205	*tank-multi bowl	MOTOR & MECHANICAL SEAL	(Remove & Install)
NT 204	*dpwell 8"	PUMP-8"multi bowl	(Disassemble)
NT 198	*sump pump	MOTOR-centrifical type	(Remove & Install)
NT 200	*sump pump	REWORK - rmv.&instl.motor,shaft packing & bearings,shaft or impellar	
NT 188	*sump pump	PUMP in manhole	(Remove or Install)

EPS TASK TIME STANDARDS - DESCRIPTIONS AND UNIT HOURS

NT 213 Disassemble and assemble 1,000 GPM fire pump, (electric driven). Includes inspection, measuring, renewal of wear rings, and machining to size.

005.55515 hours per fire pumps to disassemble and assemble

NT 202 Disassemble 1,000 GPM fire pump (electric motor driven).

001.31250 hours per fire pumps to disassemble

NT 212 Assemble 1,000 GPM fire pump (electric motor driven). Includes inspection, measuring, renewal of wear rings, and machining to size.

004.24265 hours per fire pumps to assemble

NT 191 Remove and install suction check valve on portable centrifugal pump.

000.35008 hours per suction check valves to remove and install

NT 194 Remove and install impeller and suction check valve on portable centrifugal pump.

000.51288 hours per impellers and suction check valves to remove and install

NT 201 Remove and install shaft grease retainer and shaft seal on portable centrifugal pump.

001.36493 hours per shaft grease retainers and seals to remove and install

NT 197 Remove and install shaft seal on portable centrifugal pump.

000.75419 hours per shaft seals to remove and install

NT 207 Remove and install 90 GPM Centrifugal pump. Disassemble and assemble.

002.11242 hours per centrifugal pumps to remove and install

MT 022 Machine two bearing surfaces, 2" OD x 6" length, on brass impellar and shaft assembly of centrifugal pump. Includes set up of engine lathe.

000.45733 hours per bearing surfaces to machine

NT 190 Remove and install ball bearing housing covers on single stage, split casing centrifugal pump.

000.37746 hours per ball bearing housing covers to remove and install

NT 210 Remove and install shaft and impeller to install new wear rings or ball bearings on single stage centrifugal pump, (split casing).

003.29250 hours per shafts and impellers to remove and install

NT 021 Remove packing and replace with mechanical seal in sewage pump. Pump previously removed and taken to shop.

000.35839 hours per sewage pumps to replace packing in

NT 089 Disassemble sewage lift pump in shop for inspection and overhaul

001.17675 hours per sewage lift pumps to overhaul

NT 209 Remove and install 300 GPM rotary pump from base. Remove and install shaft seal, rotor housing, and rotor.

003.09156 hours per rotary pumps to remove and install

NT 192 Remove and install rotor housing on rotary pump.

000.30843 hours per rotor housings to remove and install

NT 195 Remove and install shaft seal or bearing of rotary pump.

000.67757 hours per shaft seals or bearings to remove and install

NT 196 Remove and install stub shaft bushing and rotor housing on rotary pump.

000.61870 hours per stub shaft bushings and rotor housings to remove and install

NT 189 Remove hot water circulating pump unit (Fractional HP).

000.25605 hours per hot water circulating pump units to remove

NT 193 Remove and install hot water circulating pump motor, and remove and install shaft seal, shaft, or impeller (electrical work excluded).

000.46259 hours per hot water circulating pump motors to remove and install

NT 199 Remove and install packing and ball bearings on 200 GPM condensate pump (turbine type).

001.32019 hours per packings and ball bearings to remove and install

NT 087 Repair condensate pump. Includes remove and install pump, replace packing, repair and replace components.

004.91502 hours per condensate pumps to repair

NT 086 Repair condensate pump float and switch assembly.

002.74923 hours per condensate pump floats and switch assemblys to repair

NT 203 Disassemble and assemble a two stage condensate pump, (turbine type).

001.66922 hours per condensate pumps to disassemble and assemble

NT 211 Remove and install two stage centrifugal condensate pump unit installed as part of duplex unit. Disassemble and assemble pump. Electrical connections excluded.

003.47697 hours per centrifugal condensate pump units to remove and install

NT 208 Remove or install motor unit, discharge pipe, and one section of pump column from well. Remove or install motor from column and motor support. Electrical connections excluded.

001.89241 hours per motor units to remove or install

NT 214 Remove or install motor unit, four sections of pump column, and 8" multi-bowl pump from well. Remove or install motor from motor support and column. Electrical connections excluded.

004.06684 hours per motor units to remove or install

NT 206 Assemble 8" multi-bowl deep well pump unit. Pump unit must be previously removed from well and disassembled.

002.01479 hours per deepwell pump units to assemble

NT 088 Assemble 12" deep well pump in shop. 3 man crew.

004.54932 hours per well pumps to assemble

NT 205 Remove and install motor and mechanical seal on tank pump, (multi-bowl). Electrical connections excluded.

001.88982 hours per motors and mechanical seals to remove and install

NT 204 Disassemble 8" multi-bowl deepwell pump unit. Does not include removing from well.

001.38105 hours per deepwell pump units to disassemble

NT 198 Remove and install motor from centrifugal sump pump. Remove and install shaft packing, shaft bearing, shaft or impeller in shop. Moving pump to shop not included.

000.93896 hours per motors to remove and install

NT 200 Remove and install sump pump unit; remove and install motor, pump shaft packing, shaft bearing, shaft or impeller in shop. Moving pump unit to shop not included.

001.57248 hours per sump pump units to remove and install

NT 188 Remove or install sump pump (Fractional HP) in manhole.

000.31676 hours per sump pumps to remove or install

Shears, Power: Repair and Adjust.
Applies to series 100 Cincinnatti or similar power shears.
Applies to parts and operations as listed.

TASK TIME STANDARDS LISTING

NT 184		ADJUSTING ECCENTRICS	(Retime)
NT 185		CLUTCH & SPIDER	(Remove & Install)
NT 180		CLUTCH & SPIDER ASSEMBLY	(Remove)
NT 181		CLUTCH & SPIDER ASSEMBLY	(Install)
NT 178		CLUTCH	(Remove)
NT 176		CLUTCH	(Install)
NT 179		SPIDER	(Reassy.& Install)
NT 183		COUNTER BALANCE SPRINGS-2sets	(Remove & Install)
NT 182		KNIVES	(Set Clearance)
NT 186	12'5"	KNIVES	(Change)
NT 187	12'5"	KNIVES-set clearance GUARD	(Remove & Install)
NT 177		KNIFE GUARD	(Remove & Install)

EPS TASK TIME STANDARDS - DESCRIPTIONS AND UNIT HOURS

NT 184 Retime adjusting eccentrics on power shear (series 100 Cincinnati). Weld old taper pin holes. Drill and ream new ones. Adjust ram. Two man team.

002.54795 hours per adjusting eccentrics to retime

NT 185 Remove and install clutch and spider in power shear (series 100 Cincinnati). Drain and fill oil. Use arbor press. Inspect an clean parts. Two man team. Travel time to arbor press not included.

003.01284 hours per clutches and spiders to remove and install

NT 180 Remove clutch and spider assembly from power shear (series 100 Cincinnati). Drain oil. Clean and inspect parts. Use arbor press to press out old spider. Two man team. Travel time to arbor press not included.

001.39668 hours per clutches and spider assemblys to remove

NT 181 Install clutch and spider assembly in power shear (series 100 Cincinnati). Fill drive box with oil. Use arbor press to assemble spider. Two man team. Travel time to arbor press not included.

001.61616 hours per clutches and spider assemblys to install

NT 178 Remove clutch from power shear (series 100 Cincinnati). Drain oil. Clean and inspect parts. Two man team.

000.64862 hours per clutches to remove

NT 176 Install clutch in power shear (series 100 Cincinnati). Fill drive box with oil. Two man team.

000.49379 hours per clutches to install

NT 179 Reassemble and install spider in power shear (series 100 Cincinnati). Use arbor press to assemble worm wheel and spider Two man team. Travel to arbor press not included.

001.12237 hours per spiders to reassemble and install

NT 183 Remove and install two sets of counter-balance springs in power shear (series 100 Cincinnati). Use arbor press to compress springs for removal and installation. Two man job. Travel tim to arbor press not included.

001.74257 hours per counter-balance springs to remove and insta ll (2 sets)

NT 182 Set clearance of knives on power shear (series 100 Cincinnati). Adjust ram brace. Remove and install flywheel guard. Two man team.

001.69051 hours per knives to set clearance on

NT 186 Change knives on power shear, 12ft5" knives, (series 100 Cincinnati). Shim lower knife to correct level. Clean knives and seat. Does not include setting clearance or removing knife guard. Two man team.

006.29794 hours per power shear knives to change

NT 187 Complete change of knives, set knife clearance, remove and install knife guards on power shears 12ft5" knife (series 100 Cincinnati). Two man team.

008.56871 hours per power shear knives to change

NT 177 Remove and install knife guard on power shear, 12ft5" knife, (series 100 Cincinnati). Two man team.

000.58026 hours per knife guards to remove and install

Tools, Portable Power: Repair.
Covers wide variety of tools and operations.
Includes repair, adjustment, assemble, disassemble, replacement.

TASK TIME STANDARDS LISTING

NT 230	AIR GRINDER-portable 8"	BEARINGS	(replace)
NT 236	AIR GRINDER-portable 8"	BEARINGS	(replace 2 sets)
NT 240	AIR GRINDER-portable 8"	BEARINGS	(replace 3 sets)
NT 215	BELT SANDER-portable	SHOE COVER	(remove & install)
NT 219	BELT SANDER-portable	TOGGLE SWITCH	(replace)
NT 221	BELT SANDER-portable	DRIVE CHAIN	(replace)
NT 231	BELT SANDER-portable	DRIVE CHAIN	(replace 4 chains)
NT 216	CHIPPING HAMMER	THROTTLE VALVE ASSY	(replace worn)
NT 232	CHIPPING HAMMER	THROTTLE VALVE ASSY	(replace 4 units)
NT 220	CHIPPING HAMMER	RING VALVE	(replace)
NT 226	PNEUMATIC DRILL	BEARINGS	(disassemble)
NT 234	PNEUMATIC DRILL	BEARINGS	(disassy & assemble)
NT 239	PNEUMATIC DRILL	BEARINGS	(Rmv & Install)
NT 228	PNEUMATIC DRILL	BEARINGS	(assemble after rpl)
NT 224	ELECTRIC DRILL-portable	ARMATURE	(remove & install)
NT 229	ELECTRIC DRILL-portable	ARMATURE	(replace 2)
NT 237	ELECTRIC DRILL-portable	ARMATURE	(replace 5)
NT 223	ELECTRIC FLOOR POLISHER	BUMPER	(install)
NT 225	HYDRAULIC JACK	PLUNGER CUPS	(replace)
NT 238	HYDRAULIC JACK	PLUNGER CUPS	(replace 2 sets)
NT 235	HYDRAULIC JACK	PLUNGER CUPS	(replace 3 sets)
NT 227	HYDRAULIC JACK	PUMP	(disassy & assemble)
NT 222	ROTARY HAND SAW-portable	GUARD,top/bottom	(remove & install)
NT 233	ROTARY HAND SAW-portable	GUARD,top/bottom	(replace 4 sets)
NT 217	ROTARY HAND SAW-portable	SWITCH	(remove & install)
NT 218	STUD DRIVER	BASE PLATE, rubber	(remove & install)

NT 230 Disassemble and assemble 8" portable air grinder for replacement of bearings. Remove and install guard, abrasive wheel, housing front, handle, valve, spindle, governor, and rotor assembly. Use arbor press. Clean parts.

001.48905 hours per air grinders to disassemble and assemble

NT 236 Disassemble and assemble two 8" portable air grinders for replacement of bearings. Remove and install guards, abrasive wheels, housing fronts, handles, valves, spindles, governors, and rotor assembly. Use arbor press. Clean parts.

001.48905 hours per air grinders to disassemble and assemble

NT 240 Disassemble and assemble three 8" portable air grinders for replacement of bearings. Remove and install guard, wheel, housing, valve, spindle, governor, and rotor assembly. Use arbor press. Clean parts.

001.48905 hours per air grinders to disassemble and assemble

NT 215 Remove and install shoe cover on portable belt sander. Remove and install sander belt and shoe.

000.14688 hours per shoe covers to remove and install

NT 219 Remove and install toggle switch on portable belt sander. Remove and install cover, bracket, and switch assembly. Check operation after repair.

000.20586 hours per toggle switches to remove and install

NT 221 Remove and install drive chain on portable belt sander. Remove and install cover plate, gasket, tension spring, and pulley sprockets. Clean parts and chain. Fill gear case with grease.

000.37823 hours per drive chains to remove and install

NT 231 Remove and install drive chain for four portable belt sanders. Remove and install cover plate, gasket, tension spring, and pulley sprockets. Clean parts and chains. Fill gear cases wit grease.

000.37823 hours per drive chains to remove and install

NT 216 Disassemble and assemble chipping hammer throttle valve assembly of ring valve to replace worn parts. Remove and install plug, spring, valve, tube, push pin, and bushings.

000.15778 hours per throttle valve assemblys to disassemble and asssemble

NT 232 Disassemble and assemble four chipping hammers completely for replacement of throttle valve parts, ring valve, and ring valve lid. Disassemble and reassemble plug, spring, tube, push pins, and bushing. Clean and lubricate parts.

000.58091 hours per chipping hammers to disassemble and assemble

NT 220 Disassemble and assemble ring valve of chipping hammer to replace ring valve and lid. Includes cleaning and lubricating parts.

000.42313 hours per ring valves to disassemble and assemble

NT 226 Disassemble heavy duty pneumatic drill to replace bearings. Remove top cap, gasket, governor, gear-housing, sleeve, rotor, key, blades, oil packing, gears, bearings, and spindle. Clean and oil parts.

001.09780 hours per pneumatic drills to disassemble

NT 234 Disassemble and assemble heavy duty pneumatic drill to replace bearings and spindle. Remove and install governor, gears, rotor, blades, bearings and spindle. Use arbor press to instal bearings. Clean and oil parts. Check operation.

002.29679 hours per pneumatic drills to disassemble and assemble

NT 239 Disassemble and assemble two heavy duty pneumatic drills. Remove and install bearings. Use arbor press to install bearings. Clean and oil parts. Check operation after repairs.

002.29679 hours per pneumatic drills to disassemble and assemble

NT 228 Assemble heavy duty pneumatic drill after replacing bearings and spindle. Install shafts, gears, oil packing, blades, rotor, sleeve, gear housing, governor, gasket, and top cap. Use arbor press to install bearings. Check operation.

001.19899 hours per pneumatic drills to assemble

NT 224 Remove and install armature on portable electric drill. Remove and install gear case and armature assembly from drill case. Use arbor press to remove and install blower and bearings on armature shaft.

000.66065 hours per armatures to remove and install

NT 229 Remove and install armatures on two portable electric drills. Remove and install gear case and armature assembly from drill case. Use arbor press to remove and install blower and bearing on armature shaft.

000.66065 hours per armatures to remove and install

NT 237 Remove and install armature of five portable electric drills. Remove and install gear case and armature assembly. Use arbor press to remove and install blower and bearings on armature shaft.

000.66065 hours per armatures to remove and install

NT 223 Remove and install rubber bumper on electric floor polisher. Clamp bumper to polisher base. Drill holes in bumper and base. Tap holes in base.

000.55287 hours per bumpers to remove and install

NT 225 Disassemble and assemble hydraulic ram to replace plunger cups in portable 10 ton capacity jack. Remove and install drive screws, thread protector, pin, saddle, rings, spring, spreader cup, separators, and plunger. Clean and lubricate parts.

001.04216 hours per hydraulic rams to disassemble and assemble

NT 238 Disassemble and assemble two hydraulic rams 10 ton capacity to replace plunger cups, and two portable hydraulic pumps. Drain and fill with hydraulic oil. Clean and lubricate parts.

002.21856 hours per hydraulic rams to disassemble and assemble

NT 235 Disassemble and assemble three hydraulic rams to replace plunger cups in portable 10 ton capacity jack. Remove and install driv screws, thread protector, saddle, cups, separators, and plunger Clean and lubricate parts.

001.04216 hours per hydraulic rams to disassemble and assemble

NT 227 Disassemble and assemble portable hydraulic pump used with hydraulic jack or ram. Remove and install lever handle, packing rings, cups, valve plug, spring valve ball, base and flexible hose. Drain and fill with hydraulic oil. Clean and oil parts.

001.17640 hours per hydraulic pumps to disassemble and assemble

NT 222 Remove and install top and bottom guards on portable rotary hand saw. Remove and install foot assembly, saw blade, spring, and bearing assembly. Clean bearing assembly.

000.49928 hours per guards to remove and install

NT 233 Remove and install guards for four portable rotary hand saws. Remove and install foot assemblies, saw blades, springs, and bearing assemblies. Clean bearing assemblies.

000.49928 hours per guards to remove and install

NT 217 Remove and install switch on portable rotary hand saw. Remove and install cover plate, cord holder, and leads. Check operation of switch.

000.22998 hours per switches to remove and install

NT 218 Remove and install rubber base plate on stud driver. Remove and install barrel-end fitting, coil spring, and keeper. Clean base plate with solvent and apply adhesive.

000.20982 hours per base plates to remove and install

STAIR TREAD - drill and install non-skid treads to metal stairs

TASK TIME STANDARDS LISTING

NT 317 Drill and install non-skid treads to metal stairs

EPS TASK TIME STANDARDS - DESCRIPTIONS AND UNIT HOURS

NT 317 Drill and install metal non-skid tread to metal stair step

000.04964 hours per JOB SETUP TIME

000.05730 hours per step

Repair and replacement of arresting gear components due to wear or amount of use.

TASK TIME STANDARDS LISTING

NT 318 Replace airfield arresting gear tape

EPS TASK TIME STANDARDS - DESCRIPTIONS AND UNIT HOURS

NT 318 Replace airfield arresting gear tape - tape replaced due to wear or number of arrested landings or elapsed time period. Foot of cable is equal to the length of tape rolled on drum and out to end of tunnel. Time includes both sides of runway in calculating feet of tape.

005.99389 hours per JOB SETUP TIME

000.00177 hours per foot

TASK TIME STANDARDS DEVELOPMENT BACKUP

MT 001 1 CLEAN PART WITH SOLVENT. XXX
2 SET UP TO SPRAY METAL. XXX
3 HANDLE PER PIECE. XXX
4 SPRAYING TIME. * OCC. = (N1 X N2 X N3)/ N4 * N1 =
DIA. OF SHAFT IN INCHES.* N2 = LENGTH OF UNDERCUT.

MT 002 1 CLEAN PART WITH SOLVENT.
2 SET UP TO SPRAY METAL.
3 HANDLE PIECE.
4 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3)/ N4.

MT 003 1 SET UP LATHE TO MACHINE.
2 HANDLE PER PIECE.
3 TURN UNDERCUT.
4 ROUGH THREAD TO PROVIDE BOND.
5 SPECIAL KNURL TO ROUGH THREADS.
6 SET UP TO SPRAY.
7 HANDLE PER PIECE.
8 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3) / N4.

MT 004 1 SET UP LATHE TO MACHINE.
2 HANDLE PIECE.
3 TURN TO UNDERCUT AND FINISH.
4 ROUGH THREAD TO PROVIDE BOND.
5 SPECIAL KNURL TO ROUGH.
6 SET UP TO SPRAY.
7 HANDLE PER PIECE.
8 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3) / N4.

MT 005 1 SET UP TO MACHINE.
2 HANDLE PER PIECE.
3 TURN TO UNDERCUT AND FINISH.
4 ROUGH THREAD TO PROVIDE BOND.
5 SPECIAL KNURL TO ROUGH.
6 SET UP TO METAL SPRAY.
7 HANDLE PIECE.
8 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3) / N4.

MT 006 1 SET UP LATHE TO MACHINE.
2 HANDLING TIME PER PIECE.
3 TURN TO UNDERCUT AND FINISH.
4 THREAD TO PROVIDE BOND.
5 SPECIAL KNURL TO ROUGH THREADS.
6 SET UP TO METAL SPRAY.
7 HANDLE PIECE.
8 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3) / N4.

MT 007 1 SET UP LATHE TO MACHINE.
2 AVG. HANDLING PER PIECE.
3 TURN TO UNDERCUT AND FINISH.
4 THREAD TO PROVIDE BOND.
5 SPECIAL KNURL TO ROUGH THREADS.
6 SET UP TO METAL SPRAY.
7 HANDLING PER PIECE.
8 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3) / N4.

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MT  008  1 SET UP LATHE TO MACHINE.
         2 AVERAGE HANDLING PER PIECE.
         3 TURN TO UNDERCUT AND FINISH.
         4 THREAD TO PROVIDE BOND.
         5 SPECIAL KNURL TO ROUGH.
         6 SET UP TO METAL SPRAY.
         7 HANDLING PER PIECE.
         8 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3) / N4.

MT  009  1 SET UP LATHE.
         2 HANDLING PER PIECE.
         3 TURN UNDERCUT.
         4 ROUGH THREAD TO PROVIDE BOND.
         5 SPECIAL KNURL TO ROUGH.
         6 SET UP TO SPRAY.
         7 HANDLING FOR SPRAYING.
         8 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3) / N4.

MT  010  1 USE ARBOR PRESS TO ASSEMBLE AND DISASSEMBLE SLEEVE
           TO MANDREL.
         2 SET UP LATHE TO MACHINE SLEEVE.
         3 HANDLE FOR MACHINING.
         4 TURN UNDERCUT.
         5 FACE BOTH ENDS.
         6 ROUGH THREAD TO PROVIDE BOND.
         7 KNURL TO ROUGH THREADS.
         8 SET UP TO SPRAY.
         9 HANDLING FOR SPRAYING.
        10 SPRAYING TIME PER PIECE. * OCC. = (N1 X N2 X N3) /
           N4 * N1 = DIA. OF SHAFT IN INCHES.* N2 = LENGTH O

MT  011  1 SET UP LATHE TO MACHINE. * 2 ALLOWED FOR COMPLEX C
           OUNTER-BALANCE.
         2 HANDLE FOR PREPARATION AND FINISH MACHINING.
         3 TURN UNDERCUT.
         4 TURN (2) FILLETS AND (2) CHAMFERS - PREPARE AND FI
           NISH.
         5 ROUGH THREAD TO PROVIDE BOND
         6 KNURL TO ROUGH THREADS.
         7 SET UP TO SPRAY.
         8 HANDLE FOR SPRAYING.
         9 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3)/ N4 *
           N1 = DIA. OF SHAFT.* N2 = LENGTH OF UNDERCUT.
        10 SET UP TO MILL KEYWAY.
        11 ADDITIONAL FOR COMPLEX SET UP.
        12 HANDLING FOR MILLING.
        13 MILL 1/8" X 1-3/8" KEYWAY. * OCC. = N X N1 X N2 X
           N3 X MACHINE TIME. * N = NO. OF PIECES.* N1 = INCH
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MT 012 1 SET UP LATHE TO MACHINE.
2 HANDLING TIME TO PREPARE AND FINISH.
3 TURN TO UNDERCUT AND FINISH.
4 ROUGH THREAD TO PROVIDE BOND.
5 SPECIAL KNURL TO PREPARE THREADS.
6 SET UP TO SPRAY.
7 HANDLING FOR SPRAY.
8 METAL SPRAYING TIME. * OCC. = N1 X N2 X N3 X N4 *
N1 = DIA. OF SHAFT.* N2 = LENGTH OF UNDERCUT.

MT 013 1 RESURFACE (2) 2-1/2" JOURNALS ON 1" DIA. SHAFT INC
LUDING FINISH MACHINING.
2 FABRICATE (2) 1" ID X 1-7/8" LONG BRONZE BUSHINGS.
3 USE ARBOR PRESS TO REMOVE AND INSTALL BUSHINGS IN
END BELLS.
4 SET UP DRILL PRESS TO DRILL END BELLS.
5 HANDLE END BELLS.
6 HANDLE TIME PER HOLE.
7 DRILL HOLES TO RECEIVE NEW BUSHINGS (1.875" DEEP).
8 REAM HOLES TO RECEIVE NEW BUSHINGS (1.875" DEEP).

MT 014 1 SET UP LATHE TO MACHINE.
2 HANDLING TIME PER PIECE.
3 TURN TO UNDERCUT AND FINISH.
4 THREAD TO PROVIDE BOND.
5 SPECIAL KNURL TO ROUGH THREADS.
6 SETUP TO SPRAY.
7 HANDLING PER PIECE.
8 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3)/ N4 *
N1 = DIA. OF SHAFT.* N2 = LENGTH OF UNDERCUT.

MT 015 1 SET UP LATHE TO MACHINE.
2 HANDLE PIECE.
3 TURN TO UNDERCUT AND FINISH.
4 ROUGH THREAD TO PROVIDE BOND.
5 SPECIAL KNURL TO ROUGH.
6 SET UP TO SPRAY.
7 HANDLE PIECE.
8 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3)/ N4.

MT 016 1 SET UP LATHE TO MACHINE.
2 HANDLE FOR PREPARING AND FINISHING.
3 TURN UNDERCUT.
4 ROUGH THREAD TO PROVIDE BOND.
5 KNURL TO ROUGH.
6 SET UP TO SPRAY.
7 HANDLE FOR SPRAYING.
8 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3)/ N4.
9 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3)/ N4.

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MT  017  1 SET UP TO MILL.
         2 MILLING MACHINE PIECE HANDLING. MILLING TIME - SLA
           B MILL.
         3 MACHINE CUT MILD STEEL.
         4 SLITTING SAW
         5 KEYWAY CUTTER.
         6 ADDITIONAL PIECE HANDLING.
         7 SET UP METAL SPRAY.
         8 HANDLE PER PIECE.
         9 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3)/ N4.

MT  018  1 SET UP DRILL PRESS.
         2 HANDLING TIME PER PIECE.
         3 DRILL 1-1/8" DIA. HOLE TO 2" DEPTH.
         4 HAND TAP 1-1/8" DIA. HOLE TO 2" DEPTH.
         5 HANDLING PER HOLE.
         6 SET UP POWER HACKSAW.
         7 CUT ONE PIECE-MILD STEEL.
         8 HANDLING PER PIECE.

MT  019  1 SET UP DRILL PRESS.
         2 HANDLING PER PIECE.
         3 DRILL 1" DIA. HOLE TO 1" DEPTH.
         4 HANDLING PER HOLE.

MT  020  1 CUT PIECE 3-1/8" LONG.
         2 SET UP ENGINE LATHE.
         3 FACE ENDS.
         4 HANDLING TIME.
         5 CHECK LENGTH - SCALE.

MT  021  1 SET UP LATHE-CHUCK.
         2 FACE STOCK.
         3 CENTER DRILL.
         4 DRILL 3/8" PILOT HOLE 1" DEPTH.
         5 DRILL 2" DIAM. HOLE 1" DEPTH.
         6 CHASE INTERNAL THREADS 1" DEPTH.
         7 HANDLING TIME PER PIECE.
         8 SET UP POWER HACKSAW.
         9 CUT ONE PIECE-MILD STEEL.
        10 HANDLING PER PIECE.

MT  022  1 SET UP LATHE.
         2 TURN 2" DIAMETER X 6" LENGTH.
         3 HANDLING TIME PER PIECE.
         4 SET UP MIKE - OD.
         5 USE MIKE-OD 2 POINTS EACH AREA.

MT  023  1 SET UP DRILL PRESS.
         2 HANDLING TIME PER PIECE.
         3 DRILL 1" DIAM. HOLE 1" DEPTH.
         4 HANDLING TIME PER HOLE.
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MT  024  1 SET UP SAW.
         2 HANDLING PER STOCK LENGTH.
         3 CUT TO LENGTH.
         4 LAY OUT NOTCHES.
         5 SET UP SAW FOR NOTCHES.
         6 CUT NOTCH - 1" ON A SIDE 2" X 1.3".
         7 HANDLING TIME FOR NOTCHES.

MT  025  1 SET UP POWER HACKSAW.
         2 CUT OFF ONE PIECE OF STOCK. * OCC. = AREA = 3.14 S
           Q IN.
         3 HANDLING TIME PER PIECE.
         4 SET UP ENGINE LATHE.
         5 CENTER DRILL.
         6 TURN 1.750" DIAM.
         7 TURN 1.000" DIAM.
         8 TURN .625" DIAM.
         9 FACE SHOULDERS.
        10 CHASE ACME THREADS 6" LENGTH.
        11 CHASE STANDARD THREADS 1" LENGTH.
        12 FACE ENDS.
        13 HANDLING TIME PER PIECE.
        14 SET UP MILLING MACHINE.
        15 MILL SQUARE TAPER ON END (1/2 FREQUENCY).
        16 HANDLING TIME PER PIECE.
        17 FIT HANDWHEEL.
        18 CLEAN STEM.

MT  026  1 SET UP POWER HACKSAW.
         2 CUT OFF PIECE.
         3 HANDLING TIME PER PIECE.
         4 SET UP ENGINE LATHE - CHUCK.
         5 FACE SIDES.
         6 CENTER DRILL.
         7 DRILL TOOL STEEL OR STAINLESS STEEL.
         8 TAP STAINLESS STEEL OR TOOL STEEL.
         9 HANDLING TIME PER PIECE.

MT  027  1 LAYOUT PART ON STOCK USING A TEMPLATE.
         2 SET UP METAL CUTTING BANDSAW.
         3 PART HANDLING - STOCK SHEET.
         4 SAW 2 BLANKS (1) STRAIGHT 36" (2) STRAIGHT 6".
         5 SET UP DRILL PRESS.
         6 HANDLING PER PIECE.
         7 HANDLING PER HOLE.
         8 DRILL FOUR 1/2" HOLES FOR INTERIOR CONTOUR CORNERS
         9 DRILL FIVE 5/8" BOLT HOLES.
        10 CUT BLADE, WELD AND REPLACE ON BAND SAW.
        11 HANDLING PER PIECE.
        12 SAW INTERNAL CONTOUR 30".
        13 SAW EXTERNAL CONTOUR 40".
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MT  028  1 LAYOUT SHIELD FROM TEMPLATE.
         2 SET UP DRILL PRESS.
         3 HANDLING PER SET (10 PCS. PER SET).
         4 HANDLING PER HOLE.
         5 DRILL THREE 3/16" DIA. HOLES 1-1/4" DEPTH.
         6 INSTALL THREE BOLTS TO EACH SET OF BLANKS AND REMO
           VE.
         7 ASSEMBLE NUTS TO BOLTS AND REMOVE.
         8 SET UP METAL CUTTING BAND SAW.
         9 HANDLING PER SET.
        10 SAW CONTOUR 80".

MT  029  1 SET UP LATHE.
         2 SKIM FACE ONE VALVE IN TWO 3 INCHES OF TOOL TRAVEL
         3 CHECK SHOULDER DEPTH - DEPTH "MIKE".
         4 TURN SHOULDER DEPTH (1 AND 2) 1/2" OF TOOL TRAVEL.
         5 HANDLING PER PIECE.

MT  030  1 LAYOUT FLANGE FROM TEMPLATE.
         2 SET UP DRILL PRESS.
         3 HANDLING PER PIECE.
         4 HANDLING PER HOLE (15 HOLES-PIECES STACKED, IF MUL
           TIPLE).
         5 DRILL ONE 3/4" DIA. HOLE FOR SAW 1/2" DEPTH.
         6 DRILL FOURTEEN 3/4" DIA. BOLT HOLES 1/2" DEPTH.
         7 SET UP METAL CUTTING BAND SAW.
         8 CUT BLADE, WELD AND REPLACE ON SAW.
         9 PART HANDLING FOR INTERNAL CUT.
        10 SAW INTERNAL PROFILE 40" STRAIGHT 13" CURVED.
        11 PART HANDLING FOR EXTERNAL CUT.
        12 SAW EXTERNAL PROFILE 56" STRAIGHT 13" CURVED.

MT  031  1 SET UP POWER HACKSAW.
         2 CUT ONE PIECE OF STOCK (15.9 SQ. IN. AVG.).
         3 HANDLING PER PIECE.
         4 SET UP LATHE.
         5 CENTER DRILL.
         6 TURN 4-1/4" DIA. ONE INCH.
         7 TURN 3" DIAM. 20 INCHES.
         8 TURN 2" DIAM. FOUR INCHES.
         9 THREAD 2" DIAM.  TWO INCHES.
        10 FACE TWO SHOULDER 5/8" + 1".
        11 FACE ENDS. 2-1/8" + 1".
        12 HANDLING TIME PER PIECE.
        13 SET UP MILLING MACHINE.
        14 MILL KEYWAY 1/4" X 1/8" X 3".
        15 HANDLING TIME PER PIECE.
        16 SET UP DRILL PRESS.
        17 DRILL 3/16" DIAM. HOLE 2" DEPTH.
        18 HANDLING TIME PER PIECE.
        19 HANDLING TIME PER HOLE.
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MT  032  1 SET UP LATHE-CHUCK.
         2 TRUE UP ONE FACE.
         3 CENTER DRILL.
         4 DRILL PILOT AND 1/2" HOLE 2-1/2" DEPTH.
         5 BORE HOLE TO 2" FINISH SIZE.
         6 REMOVE PIECE FROM LATHE.
         7 SET UP LATHE - FACE PLATE.
         8 PRESS BLANK ON MANDREL.
         9 TRUE UP ONE FACE.
        10 TURN O.D.
        11 REMOVE PIECE FROM LATHE.
        12 PRESS OUT MANDREL.
        13 CUT KEYWAY USING KEYWAY CUTTER WITH ARBOR PRESS. 4
           PASSES OF CUTTER.
        14 SET UP DRILL PRESS.
        15 DRILL FOUR 5/8" PILOT HOLES 2" DEPTH.
        16 DRILL FOUR 1-1/2" HOLES 2" DEPTH.
        17 HANDLING PER PIECE.
        18 HANDLING PER HOLE.

MT  033  1 SET UP POWER HACKSAW.
         2 CUT PIECES TO 6-1/8" LENGTH.
         3 HANDLING TIME PER PIECE.
         4 SET UP ENGINE LATHE-CHUCK.
         5 FACE ONE END PER PIECE (3.14").
         6 CENTER DRILL.
         7 TURN TO 1-1/2" DIAM. 5-3/4" LENGTH.
         8 TURN TO 1" DIAM. 3" LENGTH.
         9 CHASE STANDARD THREADS 2" LENGTH.
        10 FACE SHOULDERS.
        11 FACE END.
        12 HANDLING TIME PER PIECE.
        13 SET UP DRILL PRESS.
        14 DRILL 1/8" DIAM. HOLE 1" DEPTH.
        15 HANDLING TIME PER PIECE.
        16 HANDLING TIME PER HOLE.

MT  034  1 SET UP MILLING MACHINE.
         2 MILL TOP AND BOTTOM SURFACE OF PLATES.
         3 HANDLING PER PIECE.
         4 SET UP POWER HACKSAW.
         5 CUT ONE PLATE TO LENGTH.
         6 HANDLING PER PIECE.
         7 SET UP DRILL PRESS.
         8 DRILL FOUR 1" HOLES PER PIECE 1" DEPTH.
         9 HANDLING PER PIECE.
        10 HANDLING PER HOLE.

MT  035  1 SET UP DRILL PRESS.
         2 DRILL 1" DIAM. HOLE 1" DEPTH.
         3 HANDLING TIME PER PIECE.
         4 HANDLING TIME PER HOLE.
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MT 036 1 SET UP LATHE - CHUCK.
2 FACE BOSS 3" DIAM.
3 CENTER DRILL.
4 DRILL PILOT AND 1-1/2" HOLE 3-1/2" DEPTH.
5 BORE HOLE TO FINISH SIZE 3-1/2" DEPTH.
6 TURN BOSS 3/4".
7 TURN FILLET 1/8".
8 HANDLING PER PIECE AT LATHE.
9 PRESS 2" MANDREL THROUGH BORE.
10 SET UP LATHE - BETWEEN CENTERS.
11 TURN TO 6" OD 2-1/2" WIDTH.
12 TRUE UP FACE SIDE.
13 SET UP MILLING MACHINE.
14 ADDITIONAL SET UP FOR DIVIDING HEAD.
15 CUT 80 TEETH (4"/CUT).
16 HANDLING PER PIECE AT MILLER.
17 PRESS OUT MANDREL.
18 CUT KEYWAY USING KEYWAY. CUTTER WITH ARBOR PRESS. 4 PASSES OF CUTTER.
19 SET UP DRILL PRESS.
20 DRILL ONE 1/4" HOLE 1/2" DEPTH.
21 TAP ONE 1/4" HOLE 1/2" DEPTH.
22 HANDLING PER PIECE.
23 HANDLING PER POLE.

MT 037 1 WALK TO AND FROM STORAGE. * EVERY 5TH BLADE. 20 PACES ONE WAY.
2 OBTAIN SMALL TOOL AND ASIDE. * EVERY 5TH BLADE
3 OPEN BLADE BOX FLAP.
4 REMOVE STAPLE.
5 REMOVE PART FROM COMPLEX FIXTURE. * EVERY 5TH BLADE.
6 CLAMP MATERIAL WITH "C" CLAMP. * EVERY 5TH BLADE.
7 LOOSEN "C" CLAMP. * EVERY 5TH BLADE.
8 PICK UP PART OR HAND TOOL AND ASIDE. * SCREWDRIVER, CLAMP, PLIERS EVERY 5TH BLADE.
9 REMOVE PART FROM MACHINE AND ASIDE.
10 WALK FROM BENCH TO STORES, UNOBSTRUCTED - PER 10 PACES.
11 ALIGN MATERIAL ON MEASURING BOARD.
12 COIL OR UNCOIL BANDSAW BLADE PER 6 FEET.
13 POSITION TO MEASURING STOP AND TO CUTTING STOPS.
14 MARK ONE POINT WITH PENCIL.
15 SNIP BANDSAW BLADE MATERIAL.
16 REMOVE PART FROM FIXTURE.
17 REMOVE PART FROM MACHINE AND ASIDE.
18 OBTAIN SMALL TOOL AND ASIDE.
19 POSITION WIRES FOR TWISTING.
20 TWIST WIRE BY HAND PER REVOLUTION. * TWIST 4 LOOPS FOR EACH OF 2 TIES
21 PICK UP HAND TOOL OR PART AND ASIDE.
22 WALK 30 FEET WITH BULKY OBJECT.
23 WALK FROM WORKBENCH TO WELDER AND RETURN. * EVERY 5TH BLADE. 30 PACES ONE WAY.
24 REPOSITION WELDER LEVER. * CHANGE SETTINGS EVERY 5TH BLADE.
25 TWIST WIRE BY HAND PER REVOLUTION * UNTWIST 2 WIRE TIES EVERY 5TH BLADE.
26 OBTAIN SMALL TOOL AND ASIDE. * EVERY 5TH BLADE.
27 PICK UP PART OR HAND TOOL AND ASIDE. * EVERY 5TH BLADE.
28 REPOSITION LEVER ON WELDER.
29 POSITION BLADE IN FIXTURE. * POSITION TWO ENDS OF BLADE.

30 POSITION LEVER - BAND SAW.
31 VISUAL CHECK OF BLADE AND SETTINGS.
32 TAP BLADE TO ALIGN.
33 PICK UP SCREWDRIVER AND PLIERS.
34 POSITION BLADE IN FIXTURE.
35 BUTT WELD BANDSAW BLADE.
36 POSITION LEVER - BAND SAW.
37 ANNEAL BANDSAW BLADE.
38 POSITION LEVER, UNLOCK JAWS OF BANDSAW.
39 GRIND TWO SIDES OF WELDED JOINT.
40 INSPECT WELD.
41 COIL OR UNCOIL BANDSAW BLADE PER 6 FEET.
42 TWIST WIRE BY HAND PER REVOLUTION. *TWIST WIRE TIE - 4 TWISTS.
43 POSITION WIRES FOR TWISTING.
44 REMOVE PART FROM MACHINE AND ASIDE.
45 REMOVE BLADE FROM FIXTURE.
46 VISUAL INSPECT FINISHED BLADE.

MT 038 1 SET AND SHARPEN HAND SAW.
2 CLEAN SAW WITH SOLVENT TO REMOVE GUMS.

MT 039 1 PICK UP BLADE AND ARBOR AND ASIDE.
2 WALK TO WORKBENCH OR OTHER MACHINE AND RETURN. * 30 PACES ONE WAY.
3 VISUAL INSPECT SAW TEETH.
4 RUN OFF NUT AND LAY ASIDE. * 2 NUTS PER ARBOR.
5 POSITION TOOL OR PART WITH CARE AND ASIDE.
6 TURN DOWN NUT BY HAND. * 2 NUTS PER ARBOR.
7 TIGHTEN OR LOOSEN NUT FOR POSITIONING.
8 START OR STOP MOTOR.
9 REPOSITION SAW BLADE 180 DEGREES ON ARBOR FOR SHARPENING.
10 TIGHTEN OR LOOSEN - ADJUST POSITION OF BLADE.
11 POSITION BLADE ON ARBOR AND REMOVE.
12 CHECK TOOTH EDGE AND WHEEL ALIGNMENT.
13 TAP BLADE TO ALIGN.
14 TURN FLYWHEEL BY HAND ON FILER OF AUTOMATIC SAW.
15 TRUE UP CIRCULAR SAW BLADE.
16 REMOVE EACH PART FROM SIMPLE FIXTURE.
17 POSITION ARBOR IN VISE.
18 RUN OFF WING NUT AND LAY ASIDE.
19 OPEN AND CLOSE TOOL CASE.
20 PICK UP PART OR HAND TOOL AND ASIDE.
21 POSITION PART IN VISE.
22 MOVE WING NUT TO STUD AND ENGAGE.
23 TIGHTEN WING NUT BY HAND.
24 VISUAL INSPECT SAW BLADE.
25 PICK UP FILE, HANDLE, AND HAMMER AND ASIDE
26 POSITION BLADE IN FIXTURE.
27 TAP END OF ADAPTER TO LOOSEN OR TIGHTEN.
28 REMOVE EACH PART FROM SIMPLE FIXTURE.
29 POSITION PART IN FIXTURE.
30 SHARPEN CIRCULAR SAW BLADE - PER TOOTH.
31 RUN OFF NUT AND LAY ASIDE.
32 POSITION TOOL OR PART WITH CARE AND ASIDE.
33 RUN NUT ON ARBOR.
34 TIGHTEN OR LOOSEN NUT FOR POSITIONING.
35 PICK UP AND ASIDE BLOCK 2 TIMES.
36 OPEN VISE TO PUT IN AND TAKE OUT BLOCK.
37 POSITION PART IN VISE.
38 REMOVE PART FROM VISE.
39 TIGHTEN OR LOOSEN PIPE VISE AN ADDITIONAL 1/4".
40 POSITION SAW BLADE ON ARBOR AND REMOVE.
41 INSPECT SET OF TEETH.
42 TIGHTEN AND LOOSEN ARBOR.
43 REPOSITION SAW BLADE 180 DEGREES ON ARBOR FOR SHARPENING.
44 PICK UP PART OR HAND TOOL AND LAY ASIDE.
45 SET CIRCULAR SAW TOOTH WITH HAMMER AND BLOCK PER TOOTH.

MT 040 1 SET TEETH ON BAND SAW BLADE.
2 SHARPEN TEETH ON BAND SAW BLADE.

MT 041 1 SET TEETH ON BAND SAW BLADE.
2 SHARPEN TEETH ON BAND SAW BLADE.
3 SET UP AND WELD BLADE AFTER REMOVING 6" SECTION.

MT 042 1 ASSEMBLE SCRUB BAR AND WELD.
2 DISASSEMBLE, SHARPEN AND ASSEMBLE HAND LAWNMOWER.

MT 043 1 DISASSEMBLE, SHARPEN AND ASSEMBLE HAND MOWER.
2 ASSEMBLE SMALL PART.
3 WELD AND REMOVE SLAG.
4 HAND TAP (4) HOLES.

MT 044 1 PICK UP BLADE AND ARBOR AND ASIDE.
2 WALK TO WORKBENCH OR OTHER MACHINE AND RETURN. * 30 PACES ONE WAY
3 VISUAL INSPECT SAW TEETH.
4 RUN 2 NUTS OFF ARBOR AND LAY ASIDE.
5 POSITION TOOL OR PART WITH PRECISION AND ASIDE.
6 TIGHTEN NUT BY HAND. * 2 NUTS PER ARBOR.
7 TIGHTEN OR LOOSEN NUT FOR POSITIONING.
8 START OR STOP MOTOR.
9 REPOSITION SAW BLADE 180 DEGREES ON ARBOR FOR SHARPENING.
10 ADJUST POSITION OF BLADE - TIGHTEN AND LOOSEN.
11 POSITION SAW BLADE ON ARBOR OR REMOVE FOR SHARPENING.
12 CHECK TOOTH EDGE AND WHEEL ALIGNMENT.
13 TAP BLADE TO ALIGN.
14 TURN FLYWHEEL BY HAND ON FILER OF AUTOMATIC SAW SHARPENING MACHINE.
15 TRUE UP CIRCULAR SAW BLADE.
16 REMOVE EACH PART FROM SIMPLE FIXTURE.
17 POSITION PART IN VISE
18 REMOVE WING NUT AND LAY ASIDE.
19 OPEN AND CLOSE FIXTURE, POSITION AND REMOVE.
20 PICK UP PART OR HAND TOOL AND ASIDE.
21 POSITION PART IN VISE.
22 ENGAGE WING NUT ON STUD.
23 TIGHTEN WING NUT BY HAND.
24 VISUAL INSPECT SAW BLADE.
25 PICK UP FILE, HANDLE, AND HAMMER AND ASIDE.
26 POSITION BLADE IN FIXTURE.
27 TAP END OF ADAPTER TO LOOSEN OR TIGHTEN.
28 REMOVE EACH PART FROM FIXTURE.
29 POSITION ARBOR IN VISE.
30 SHARPEN CIRCULAR SAW BLADE - PER TOOTH.
31 RUN OFF NUT AND LAY ASIDE.
32 POSITION TOOL OR PART WITH CARE AND ASIDE.
33 TURN DOWN NUT BY HAND.
34 TIGHTEN OR LOOSEN NUT TO POSITION BLADE.
35 PICK UP BLOCK AND ASIDE.
36 OPEN VISE TO PUT IN AND TAKE OUT BLOCK.
37 POSITION PART IN VISE.
38 REMOVE PART FROM VISE.
39 TIGHTEN OR LOOSEN VISE AN ADDITIONAL 1/4".
40 POSITION SAW BLADE ON ARBOR OR REMOVE FOR SHARPENING.
41 VISUAL INSPECT SET OF TEETH.
42 TIGHTEN AND LOOSEN ARBOR.
43 POSITION SAW BLADE 180 DEGREES ON ARBOR FOR SHARPENING.

44 PICK UP PART OR HAND TOOL AND ASIDE.
45 SET CIRCULAR SAW TOOTH WITH HAMMER AND BLOCK - PER TOOTH.

MT 045 1 SET AND SHARPEN HAND SAW.
2 EXTRA FILING TO CORRECT DULLNESS.
3 POLISH BLADE TO REMOVE PITS.

MT 046 1 DISASSEMBLE, SHARPEN AND ASSEMBLE HAND LAWN MOWER.
INCH = LENGTH OF BLADE IN INCHES.

MT 047 1 WALK FROM MACHINE TO WORKBENCH OR OTHER MACHINE AN
D RETURN. 25 PACES DISTANCE ONE WAY.
2 PICK UP WRENCH AND SCREWDRIVER AND ASIDE.
3 TIGHTEN OR LOOSEN NUT FOR POSITIONING.
4 TURN NUT OFF BY HAND.
5 MOVE NUT TO STUD AND ENGAGE.
6 COIL OR UNCOIL BANDSAW BLADE.
7 POSITION BAND SAW BLADE ON TWO ROLLERS OF AUTOMATI
C SHARPENING MACHINE.
8 TAP BLADE TO ALIGN.
9 VISUALLY CHECK BLADE SETTINGS.
10 TAP BLADE TO ALIGN.
11 MARK ONE POINT WITH PENCIL.
12 REMOVE PART FROM FIXTURE.
13 START OR STOP MOTOR.
14 TWIST WIRE TO SECURE BLADE.
15 TAP END OF ADAPTER TO LOOSEN OR TIGHTEN.
16 SET BANDSAW BLADE TEETH.

MT 048 1 PICK UP BLADE AND ARBOR AND ASIDE.
2 WALK TO WORKBENCH OR OTHER MACHINE AND RETURN. * 3
0 PACES ONE WAY.
3 VISUAL INSPECT TEETH.
4 RUN NUT OFF ARBOR BY HAND AND ASIDE.
5 POSITION TOOL OR PART WITH CARE AND ASIDE.
6 TIGHTEN NUT ON ARBOR BY HAND.
7 TIGHTEN OR LOOSEN NUT FOR POSITIONING.
8 START OR STOP MOTOR.
9 POSITION SAW BLADE 180 DEGREES ON ARBOR FOR SHARPE
NING.
10 ADJUST POSITION OF BLADE - TIGHTEN OR LOOSEN.
11 POSITION SAW BLADE ON ARBOR OR REMOVE FOR SHARPENI
NG.
12 VISUAL CHECK TOOTH EDGE AND WHEEL ALIGNMENT
13 TAP BLADE TO ALIGN.
14 TURN FLYWHEEL BY HAND ON FILER OF AUTOMATIC SAW SH
ARPENING MACHINE.
15 TRUE UP CIRCULAR SAW BLADE.
16 REMOVE EACH PART FROM SIMPLE FIXTURE.
17 POSITION PART IN VISE.
18 RUN OFF WINGNUT BY HAND AND ASIDE.
19 OPEN AND CLOSE FIXTURE.
20 PICK UP PART OR HAND TOOL AND ASIDE.
21 POSITION PART IN VISE.
22 MOVE WINGNUT TO STUD AND ENGAGE.
23 TIGHTEN WING NUT BY HAND - POSITION AND REMOVE.
24 VISUAL INSPECT SAW BLADE.
25 PICK UP FILE, HANDLE AND HAMMER AND ASIDE.
26 TURN BLADE IN FIXTURE.
27 TAP END OF ADAPTER TO LOOSEN OR TIGHTEN BLADE.
28 REMOVE EACH PART FROM FIXTURE.
29 POSITION PART IN VISE.
30 SHARPEN CIRCULAR SAW BLADE - PER TOOTH.
31 RUN OFF NUT AND LAY ASIDE.
32 POSITION TOOL OR PART WITH CARE AND ASIDE.
33 TURN NUT ON ARBOR BY HAND.
34 TIGHTEN OR LOOSEN NUT FOR POSITIONING.

35 PICK UP AND ASIDE BLOCK.
36 OPEN VISE TO PUT IN AND TAKE OUT BLOCK.
37 POSITION PART IN VISE.
38 REMOVE PART FROM VISE.
39 TIGHTEN OR LOOSEN VICE AN ADDITIONAL 1/4".
40 POSITION SAW BLADE ON ARBOR OR REMOVE FOR SHARPENI
NG.
41 VISUAL INSPECT SET OF TEETH.
42 TIGHTEN AND LOOSEN NUT FOR POSITIONING.
43 POSITION SAW BLADE 180 DEGREES ON ARBOR FOR SHARPE
NING.
44 PICK UP PART OR HAND TOOL AND ASIDE.
45 SET CIRCULAR SAW TOOTH WITH HAMMER AND BLOCK.

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MT  049  1 SET UP POWER HACKSAW.
         2 CUT PLATE TO LENGTH (6 SQ. IN).
         3 HANDLING AT MACHINE.
         4 SET UP DRILL PRESS.
         5 DRILL 1" HOLES.
         6 HANDLING PER PIECE.
         7 HANDLING PER HOLE.
         8 SET UP MILLING MACHINE.
         9 MILL TOP AND BOTTOM SURFACE.
        10 HANDLING PER PIECE.

MT  050  1 SET UP POWER HACKSAW.
         2 CUT PLATE TO LENGTH (4.5 SQ. IN.).
         3 HANDLING AT MACHINE.
         4 SET UP DRILL PRESS.
         5 DRILL 1" HOLES.
         6 HANDLING PER PIECE.
         7 HANDLING PER HOLE.

MT  051  1 SET UP POWER HACKSAW.
         2 CUT PLATE TO LENGTH (6 SQ. IN.).
         3 HANDLING AT MACHINE.
         4 SET UP DRILL PRESS.
         5 DRILL 1" HOLES.
         6 HANDLING PER PIECE.
         7 HANDLING PER HOLE.

MT  052  1 SET UP POWER HACKSAW.
         2 MATERIAL HANDLING PER BOLT.
         3 CUT TO SIZE (CROSS SECTION = 1.77 SQ. IN.).
         4 SET UP BOLT THREADING MACHINE.
         5 BOLT HANDLING.
         6 DIETHREAD BOLT.

MT  053  1 SET UP POWER HACKSAW.
         2 CUT TO SIZE (CROSS SECTION = 1.77 SQ. IN.).
         3 HANDLING TIME PER PIECE.
         4 SET UP BOLT THREADING MACHINE.
         5 THREAD BOLT 1-1/2" DIA. .0018 HOURS PER INCH OF TH
           READ.
         6 HANDLING TIME PER BOLT/STUD.

MT  054  1 SET UP POWER HACKSAW.
         2 CUT TO SIZE (CROSS SECTION = 1.77 SQ. IN.).
         3 HANDLING TIME PER PIECE.
         4 SET UP BOLT THREADING MACHINE.
         5 THREAD BOLT - 1-1/2" DIAMETER.
         6 HANDLING TIME PER BOLT.
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MT  055  1 SET UP POWER HACKSAW.
         2 CUT TO SIZE (CROSS SECTION = 1.77 SQ. IN.).
         3 HANDLING TIME PER PIECE.
         4 SET UP BOLT THREADING MACHINE.
         5 THREAD STUD - 2 ENDS.
         6 HANDLING TIME PER STUD.

MT  056  1 SET UP POWER HACKSAW.
         2 CUT TO SIZE (1.77 SQ. IN. SECTION).
         3 HANDLING TIME PER PIECE.
         4 SET UP BOLT THREADING MACHINE.
         5 THREAD STUD - 2 ENDS.
         6 HANDLING TIME PER STUD.

MT  057  1 SET UP POWER HACKSAW.
         2 CUT TO SIZE (1.77 SQ. IN. SECTION).
         3 HANDLING TIME PER PIECE.
         4 SET UP BOLT THREADING MACHINE.
         5 THREAD STUD - 2 ENDS.
         6 HANDLING TIME PER STUD.

MT  058  1 FABRICATE BUSHING.
         2 SET UP DRILL PRESS.
         3 DRILL 1/4" OIL HOLE.
         4 HANDLING TIME PER PIECE.
         5 HANDLING TIME PER HOLE.
         6 PRESS INTO PLACE.
         7 MATERIAL HANDLING FOR MOTOR AND HOUSING.

MT  059  1 SET UP ENGINE LATHE.
         2 HANDLING TIME PER PIECE.
         3 TURN BUSHINGS TO I.D.
         4 CUT OIL GROOVES.
         5 DRILL TO I.D.
         6 REAM BUSHING TO I.D.
         7 CUT OFF AND FACE BUSHING.
         8 SET UP TO MIKE O.D.
         9 SET UP TO MIKE I.D.
        10 USE MIKE O.D. 2 POINTS EACH PIECE.
        11 USE MIKE I.D. 2 POINTS EACH PIECE.

MT  060  1 SET UP ENGINE LATHE.
         2 FACE END.
         3 BORE TO 3" I.D. 3-1/4" DEPTH.
         4 TURN TO 3-1/2" O.D.
         5 CUT OIL GROOVES.
         6 CUT OFF AND FACE BUSHINGS.
         7 HANDLING TIME PER PIECE.
         8 SET UP TO MIKE O.D.
         9 SET UP TO MIKE I.D.
        10 USE MIKE O.D. 2 PTS EACH PIECE.
        11 USE MIKE I.D. 2 PTS. EACH PIECE.
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MT  061  1 SET UP POWER HACKSAW.
         2 CUT PIECE OF NON-FERROUS STOCK.
         3 MATERIAL HANDLING PER PIECE.

MT  062  1 SET UP POWER HACKSAW.
         2 CUT PIECE OF NON-FERROUS STOCK.
         3 MATERIAL HANDLING PER PIECE.

MT  063  1 SET UP POWER HACKSAW.
         2 CUT PIECE OF NON-FERROUS STOCK.
         3 MATERIAL HANDLING PER PIECE.

MT  064  1 SET UP POWER HACKSAW.
         2 CUT PIECE OF MILD STEEL OR CAST IRON.
         3 MATERIAL HANDLING PER PIECE.

MT  065  1 SET UP POWER HACKSAW.
         2 CUT PIECE OF MILD STEEL OR CAST IRON.
         3 MATERIAL HANDLING PER PIECE.

MT  066  1 SET UP POWER HACKSAW.
         2 CUT PIECE OF STAINLESS OR TOOL STEEL.
         3 MATERIAL HANDLING PER PIECE.

MT  067  1 SET UP POWER HACKSAW.
         2 CUT PIECES OF STAINLESS OR TOOL STEEL.
         3 MATERIAL HANDLING PER PIECE.

MT  068  1 SET UP POWER HACKSAW.
         2 CUT PIECES OF STAINLESS OR TOOL STEEL.
         3 MATERIAL HANDLING PER PIECE.

MT  069  1 SET UP POWER HACKSAW.
         2 CUT PIECES OF MILD STEEL OR CAST IRON.
         3 MATERIAL HANDLING PER PIECE.

MT  070  1 SET UP PANTOGRAPH.
         2 MAKE BAKELITE SIGN.
         3 ENGRAVE LETTERS IN METAL OR BAKELITE.

MT  071  1 SET UP PANTOGRAPH.
         2 MAKE METAL SIGN
         3 ENGRAVE LETTERS IN METAL OR BAKELITE.

MT  072  1 SET UP PANTOGRAPH.
         2 MAKE PLASTIC SIGN.
         3 ENGRAVE LETTERS IN PLASTIC.

MT  073  1 SET UP LATHE.
         2 HANDLING AT MACHINE.
         3 TURN TO UNDERCUT.
         4 THREAD TO PROVIDE BOND.
         5 KNURL TO ROUGH THREADS.
         6 TURN TO FINISH O.D.
         7 TURN TO FINISH GROOVE.
         8 SET UP TO SPRAY.
         9 HANDLE FOR SPRAY.
        10 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3) / N4.
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MT 074
1 SET UP LATHE.
2 HANDLING AT MACHINE.
3 TURN TO UNDERCUT.
4 THREAD TO PROVIDE BOND.
5 KNURL TO ROUGH THREAD.
6 TURN TO FINISH O.D.
7 TURN TO FINISH GROOVE.
8 SET UP TO SPRAY.
9 HANDLE FOR SPRAY.
10 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3) / N4.

MT 075
1 SET UP LATHE.
2 HANDLING AT MACHINE.
3 TURN TO UNDERCUT.
4 THREAD TO PROVIDE BOND.
5 KNURL TO ROUGH THREADS.
6 TURN TO FINISH O.D.
7 TURN TO FINISH GROOVE.
8 SET UP TO SPRAY.
9 HANDLE FOR SPRAY.
10 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3) / N4.

MT 076
1 SET UP LATHE.
2 HANDLING AT MACHINE.
3 TURN TO UNDERCUT.
4 THREAD TO PROVIDE BOND.
5 KNURL TO ROUGH THREADS.
6 TURN TO FINISH O.D.
7 TURN TO FINISH GROOVE.
8 SET UP TO SPRAY.
9 HANDLE FOR SPRAY.
10 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3) / N4.

MT 077
1 SET UP LATHE.
2 HANDLING AT MACHINE.
3 TURN TO UNDERCUT.
4 THREAD TO PROVIDE BOND.
5 KNURL TO ROUGH THREADS.
6 TURN TO FINISH 0.D.
7 TURN TO FINISH GROOVE.
8 SET UP TO SPRAY.
9 HANDLE FOR SPRAY.
10 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3) / N4.

MT 078
1 SET UP LATHE.
2 HANDLING AT MACHINE.
3 TURN TO UNDERCUT.
4 TURN TO FINISH.
5 SET UP TO SPRAY.
6 HANDLE FOR SPRAY.
7 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3) / N4.

MT 079 1 SET UP LATHE.
2 HANDLING AT MACHINE.
3 TURN TO UNDERCUT.
4 TURN TO FINISH.
5 SET UP TO SPRAY.
6 HANDLE FOR SPRAY.
7 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3) / N4.

MT 080 1 SET UP LATHE.
2 HANDLING AT MACHINE.
3 TURN TO UNDERCUT.
4 TURN TO FINISH.
5 SET UP TO SPRAY.
6 HANDLE FOR SPRAY.
7 METAL SPRAYING TIME. * OCC. = (N1 X N2 X N3) / N4.

MT 081 1 OBTAIN AND POSITION LAWNMOWER OR REEL BLADES ON GR
INDER.
2 ATTACH OR DETACH SPEED WEIGHT TO OR FROM LAWN- MOW
ER. * ATTACHED AND DETACHED.
3 OBTAIN AND MOVE CUTTER. * 5 BLADES ARE GROUND AN A
VERAGE OF 6 TIMES.
4 MOVE AND POSITION CUTTER TO BLADES. * 5 BLADES ARE
GROUND AN AVERAGE OF 6 TIMES.
5 REMOVE LAWNMOWER BODY OR REEL BLADES FROM GRINDER.
6 ADJUST GRINDING WHEEL FOR LAWNMOWER OVER 22 INCHES
7 INSPECT BED KNIFE BLADES OR REEL BLADES. * AVERAGE
NUMBER OF INSPECTIONS.
8 PICK UP AND LAY ASIDE TOOL (WRENCH, HAMMER, MAUL,
PINCH BAR, ETC.)
9 WALK TO AND FROM BENCH AND LAWNMOWER STORAGE AREA.
10 WALK TO AND FROM BENCH AND GRINDER. * TO GRINDER A
ND TO BENCH WITH BLADES.
11 LIFT LAWNMOWER TO BENCH. * REEL BLADES AND BED KNI
FE FROM FLOOR AND BACK.
12 TURN OVER LAWNMOWER ON BENCH. * REEL BLADES TWICE
TO DEBURR.
13 REMOVE TAG FROM LAWNMOWER. * ON REEL BLADES AND BE
D KNIFE.
14 PLACE TAG ON LAWNMOWER. * ON REEL BLADES AND BED K
NIFE.
15 PRINT "NEW PARTS INSTALLED" ON TAG. * ON REEL BLAD
ES AND BED KNIFE TAGS.
16 OBTAIN AND POSITION LAWNMOWER BODY OR REEL BLADES
ON GRINDER.
17 REMOVE LAWNMOWER BODY OR REEL BLADES FROM GRINDER.
18 ATTACH OR DETACH SPEED WEIGHT TO OR FROM LAWN- MOW
ER.
19 OBTAIN AND MOVE CUTTER. * 4 MOVES ALLOWED.
20 MOVE AND POSITION CUTTER TO BLADES. * 4 MOVES ALLO
WED.
21 ADJUST GRINDING WHEEL FEED FOR LAWNMOWER OVER 22".
22 INSPECT BED KNIFE OR REEL BLADES. * 4 REEL AND 2 B
ED KNIFE BLADES.
23 INSTALL ON OR REMOVE BED KNIFE BLADE FROM GRINDER.
24 PICK UP AND LAY ASIDE FILE OR STONE. * DEBURR TWO
TIMES.
25 DEBURR BLADE (23" LAWNMOWER AND LARGER.) * AVERAGE
OF TWO ALLOWED.
26 ADJUST GRINDER TABLE HORIZONTALLY OR VERTICALLY FO
R FINAL TABLE ADJUSTMENT. * VERTICAL AND HORIZONTA
27 OBTAIN AND MOVE CUTTER. * TWO TRIAL CUTS FOR REEL
AND ONE FOR BLADE.
28 MOVE AND POSITION CUTTER TO BLADES. * POSITIONED T

O REEL (2 TRIAL CUTS) AND TO BED * KNIFE (1 TRIAL
29 TRIAL CUT (CUTTING AND RETURN) * 2 ON REEL AND 1 O
N BED KNIFE.
30 START OR STOP MOTOR. * START AND STOP GRINDER FOR
EACH BED KNIFE AND * REEL.
31 ADJUST GRINDING WHEEL FEED FOR LAWNMOWER OVER 22".
32 ADJUST GRINDER TABLE HORIZONTALLY AND VERTICALLY,
INITIAL TABLE ADJUSTMENT FOR LAWNMOWER OVER 22".
33 OBTAIN, POSITION ON GRINDER AND SET ASIDE HOLDING
DEVICES. * TWO HOLDING DEVICES.
34 OBTAIN AND ASSEMBLE COUNTER-BALLANCE SPRING ON GRI
NDING ARM OR DISASSEMBLE SPRING FROM CUTTER ARM AN
35 OBTAIN AND ASSEMBLE ROD TO CUTTING ARM OR DIS- ASS
EMBLE AND PLACE ASIDE. * ASSEMBLE AND REMOVE.
36 OBTAIN AND MOVE CUTTER.
37 MOVE AND POSITION CUTTER TO BLADES.
38 ADJUST CUTTING ARM ROD ON LAWNMOWER SHARPENER.
39 POSITION HOLDING DEVICE ON GRINDER PER DEVICE. * R
EEL AND BED KNIFE.
40 SET STOP ON LAWNMOWER GRINDER.
41 PICK UP AND LAY ASIDE TOOL (WRENCH, HAMMER, MAUL,
PINCH BAR, ETC.). * 4 ASSORTED TOOLS.
42 WALK TO OR FROM BENCH AND GRINDER. * TWO TRIPS ALL
OWED.
43 SHARPEN LAWNMOWER REEL, PER BLADE, PER INCH. * FIV
E BLADES PER REEL.
44 SHARPEN BED KNIFE BLADE PER INCH. * AVERAGE FOUR P
ASSES USED TO SHARPEN KNIFE LENGTH * VARIES 17" TO

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MT  082  1 INSERT KEY INTO LOCK AND REMOVE AFTER LOCK REMOVAL
         2 TURN LOCK HANDLE TO REMOVE
         3 LOOSEN AND TIGHTEN LOCK RING WITH SPANNER WRENCH
         4 TWIST AND REMOVE LOCK RING TO REMOVE KNOB FROM DOO
           R
         5 REMOVE AND INSTALL TAILPIECE AND SPRINGS
         6 REMOVE CORE FROM LOCK WITH TUBE AND REINSTALL
         7 SELECT AND INSERT NEW PINS *AVERAGE SIX PINS PER L
           OCK X TWO ROWS
         8 APPLY GRAPHITE TO LOCK PINS AND CORE FROM TUBE *BA
           SED ON VIDEO STUDY MV-0004 - AVERAGE OF 18 *OCCURA
         9 STAKE LOCK PINS WITH HAMMER AND CENTER PUNCH
        10 TEST LOCK OPERATION WITH KEY AFTER INSTALLATION

MT  083  1 DIAL IN OLD COMBINATION TO OPEN
         2 PULL OPEN DOOR OR DRAWER AND CLOSE
         3 DISASSEMBLE, CLEAN, LUBE, TIGHTEN , ASSEMBLE LOCK
         4 INSERT KEY IN BACK OF LOCK TO CLEAR TUMBLERS
         5 GET NEW COMBINATION FROM CUSTOMER
         6 READ COMBINATION
         7 DIAL IN NEW COMBINATION
         8 TEST COMBINATION BY REPEATEDLY CLEARING LOCK AND D
           IALING IN
         9 FILL OUT SECURITY PAPERWORK, ETC. AS NEEDED

MT  084  1 FABRICATE KEY FROM SAMPLE KEY BY GRINDING

MT  085  1 FABRICATE KEY FROM CODE BY PUNCH

MT  086  1 GET LOCKSMITH PICKS TO DESK
         2 GET PICKS FROM CASE
         3 PICK DESK DRAWER LOCK *BASED ON VIDEO STUDY MV-004
           C #1775 = .01861 HOURS
         4 OPEN DRAWER FOR ACCESS TO LOCK AND CLOSE
         5 PRY DRAWER TRAY WITH SCREWDRIVER TO REMOVE FOR ACC
           ESS
         6 REMOVE AND LATER INSTALL DRAWER TRAY
         7 VISUALLY INSPECT DRAWER LOCK
         8 REMOVE AND LATER INSTALL LOCK RETAINING CLIP
         9 LOOSEN LOCK FROM DRAWER
        10 REMOVE OLD LOCK FROM DRAWER
        11 OBTAIN NEW LOCK
        12 INSTALL NEW LOCK IN DRAWER
        13 PRESS LOCK IN PLACE
        14 INSERT KEY IN LOCK AND TEST OPERATION WITH DRAWER
           OPENED AND CLOSED
        15 CHECK DOOR OPENING AND CLOSING
        16 CHECK OTHER DRAWERS FOR CORRECT OPERATION
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MT 087
1 GET VISE GRIP PLIERS TO BREAK LOCK AND ASIDE
2 BREAK LOCK WITH VISE GRIP TO OPEN CABINET
3 REMOVE AND LATER INSTALL TWELVE SCREWS HOLDING DOO R PANELS IN PLACE
4 DETACH METAL DOOR PANELS FROM GLASS
5 REMOVE DOOR PANELS
6 REMOVE AND LATER INSTALL SCREW HOLDING LOCK TO DOO R
7 DETACH AND REMOVE UPPER AND LOWER LOCKING BARS - E ACH BAR IS ATTACHED AT LOCK AND THROUGH SLOT IN TO
8 PRESS OLD LOCK TO REMOVE FROM DOOR
9 REMOVE OLD LOCK AND ASIDE
10 EXAMINE LOCK
11 OBTAIN AND INSTALL NEW LOCK
12 PRESS NEW LOCK IN PLACE
13 HOLD UPPER LOCK BAR WITH VISE GRIPS TO ALIGN WITH LOCK AND LOWER BAR
14 ATTACH LOCK BARS TO LOCK AND TO SLOTS IN DOOR FRAM E
15 CLOSE AND LOCK DOOR TO TEST
16 CHECK LOCK WITH KEY
17 ADJUST DOOR HINGES FOR SMOOTH OPERATION
18 CHECK LOCK OPERATION

NT 012
1 UNPACK FAN AND INSTRUCTIONS
2 EXAMINE FAN, HARDWARE AND INSTRUCTIONS
3 LOCATE STUDS IN WALL TO DETERMINE FAN LOCATION IF REQUIRED *OCCURENCE 50%
4 MEASURE AND MARK WALL FOR FAN OPENING
5 GET AND LAY OUT EXTENSION CORD FOR DRILL AND SABRE SAW
6 PLACE DROP CLOTH TO CATCH DEBRIS
7 GET DRILL MOTOR FROM FLOOR
8 DRILL HOLE THROUGH WALL TO START CUTOUT *BASED ON DRILL 2" DEEP SO OCCURENCE IS 1/2
9 ASIDE DRILL MOTOR
10 GET SABRE SAW FROM FLOOR
11 SAW OUT OPENING FOR FAN IN WALL *STD FOR 1FT X 1FT OPENING MULTIPLIED BY 2 FOR FAN *OPENING AND DIVI
12 SAW OUT CORNERS OF FAN OPENING TO SIZE *STD IS FOR TWO CORNERS AND DIVIDED BY 2 AS WALL *IS WOOD OR
13 ASIDE SABRE SAW TO FLOOR
14 LAYOUT AND MARK FAN MOUNTING HOLES
15 GET DRILL MOTOR FROM FLOOR
16 GET CHUCK KEY TO LOOSEN AND TIGHTEN CHUCK
17 HAND TIGHTEN CHUCK AND LATER LOOSEN
18 LOOSEN DRILL CHUCK WITH CHUCK KEY AND LATER TIGHTE N
19 REMOVE DRILL FROM CHUCK AND REPLACE WITH CORRECT S IZE DRILL
20 POSITION DRILL TO LAYOUT WORK
21 DRILL MOUNTING HOLES IN WALL *EIGHT HOLES THROUGH WOOD OR SHEET METAL AS STD IS *FOR 1" STEEL
22 ASIDE DRILL MOTOR TO FLOOR
23 INSTALL EXHAUST FAN IN OPENING
24 INSTALL SCREWS TO HOLD EXHAUST FAN TO WALL
25 CAULK AROUND FAN AFTER INSTALLATION

NT 013 1 OBTAIN DRILL MOTOR FROM FLOOR
2 INSERT PROPER SIZE DRILL IN CHUCK
3 HAND TIGHTEN DRILL CHUCK
4 GET CHUCK KEY TO TIGHTEN DRILL IN CHUCK
5 TIGHTEN DRILL CHUCK WITH CHUCK KEY
6 MARK HOLE LOCATION WITH CENTER PUNCH
7 ALIGN DRILL TO CENTER PUNCH MARK
8 DRILL HOLE IN BRASS OR ALUMINUM
9 CLEAN DRILLED HOLE BY RUNNING DRILL IN AND OUT
10 ASIDE DRILL MOTOR TO FLOOR
11 DEBURR HOLE AFTER DRILLING
12 EXAMINE FINISHED HOLE

NT 014 1 OBTAIN DRILL MOTOR FROM FLOOR
2 INSERT PROPER SIZE DRILL IN CHUCK
3 HAND TIGHTEN DRILL CHUCK
4 GET CHUCK KEY TO TIGHTEN DRILL IN CHUCK
5 TIGHTEN DRILL CHUCK WITH CHUCK KEY
6 MARK HOLE LOCATION WITH CENTER PUNCH
7 ALIGN DRILL TO CENTER PUNCH MARK
8 DRILL HOLE IN CAST IRON OR BRONZE
9 CLEAN DRILLED HOLE BY RUNNING DRILL IN AND OUT
10 ASIDE DRILL MOTOR TO FLOOR
11 DEBURR HOLE AFTER DRILLING
12 EXAMINE FINISHED HOLE

NT 015 1 OBTAIN DRILL MOTOR FROM FLOOR
2 INSERT PROPER SIZE DRILL IN CHUCK
3 HAND TIGHTEN DRILL CHUCK
4 GET CHUCK KEY TO TIGHTEN DRILL IN CHUCK
5 TIGHTEN DRILL CHUCK WITH CHUCK KEY
6 MARK HOLE LOCATION WITH CENTER PUNCH
7 ALIGN DRILL TO CENTER PUNCH MARK
8 DRILL HOLE IN STEEL
9 CLEAN DRILLED HOLE BY RUNNING DRILL IN AND OUT
10 ASIDE DRILL MOTOR TO FLOOR
11 DEBURR HOLE AFTER DRILLING
12 EXAMINE FINISHED HOLE

NT 016 1 REMOVE ALLEN SCREWS HOLDING COVER TO BRAKE.
2 REMOVE SPINDLE BRAKE COVER.
3 TEST BRAKE WITH SPINDLE RUNNING.
4 MANUFACTURE TWO SHIMS FROM SHIM STOCK FOR BRAKE.
5 REMOVE NUT AT END OF SPINDLE.
6 INSTALL TWO SHIMS IN BRAKE.
7 REPLACE NUT TO SPINDLE.
8 TEST BRAKE WITH SPINDLE RUNNING.
9 MANUFACTURE ONE ADDITIONAL SHIM.
10 REMOVE NUT AT END OF SPINDLE.
11 INSTALL ADDITIONAL SHIM.
12 REPLACE NUT AT END OF SPINDLE.
13 TEST BRAKE WITH SPINDLE RUNNING.
14 ADJUST BRAKE WITH ALLEN WRENCH.
15 TEST BRAKE AFTER ADJUSTMENT.
16 REPLACE COVER TO BRAKE.
17 INSTALL SCREWS TO COVER.

NT 017 1 TURN OFF POWER TO COOKER.
2 VISUALLY INSPECT COOKER.
3 OPEN FRONT COVER.
4 OPEN VALVE TO DRAIN WATER.
5 TURN ON POWER TO COOKER.
6 GET TOOLS FROM TOOLBOX.
7 TEST CONTACTORS WITH VOLTMETER. * THREE CONTACTORS WITH SIX CONNECTIONS EACH.
8 VISUALLY INSPECT SWITCH PANEL.
9 SHUT OFF POWER TO COOKER.
10 REMOVE FRONT AND SIDE PANELS. * NO SCREWS - PULL OFF PANELS.
11 CHECK CONTACTORS WITH VOLTMETER.
12 REMOVE THREE CONNECTIONS TO HEATING ELEMENT.
13 BEND WIRES FOR ACCESS. * THREE WIRES.
14 CHECK CONTACTOR SWITCHES BY DEPRESSING WITH SCREWDRIVER.
15 SET UP RATCHET WITH SPECIAL SOCKET FOR ELEMENT.
16 REMOVE THREADED HEATING ELEMENT WITH RATCHET AND SOCKET.
17 CLEAN DEBRIS FROM THREADED OPENING.
18 WRAP THREADS OF NEW ELEMENT WITH TEFLON TAPE TO PREVENT LEAKAGE.
19 INSTALL ELEMENT WITH FIRST FEW THREADS BY HAND.
20 TIGHTEN ELEMENT WITH SPECIAL SOCKET AND RATCHET.
21 CHECK NEW CONTACTORS WITH VOLTMETER.
22 TIGHTEN SIX CONNECTIONS.
23 CHECK WIRING CONNECTIONS AGAINST SCHEMATIC.
24 REMOVE LOOSE WIRE FROM SWITCH PANEL. TWO SCREWS.
25 USE VISE GRIP PLIERS TO CRIMP LOOSE CONNECTION.
26 REPLACE WIRE. TWO SCREWS.
27 CONNECT ELEMENT TO SWITCH PANEL. THREE CONNECTIONS
28 CHECK SIX NUTS ON SWITCH PANEL FOR TIGHTNESS.
29 TEST CONNECTIONS WITH VOLTMETER.
30 TURN ON POWER TO COOKER.
31 VISUALLY INSPECT WIRING AND CONNECTIONS.
32 REPLACE FRONT AND SIDE PANELS; PRESS IN PLACE.
33 TURN ON WATER TO FILL TANK.
34 CHECK PRESSURE AND CYCLE TIME OF COOKER.

NT 018 1 TURN ON POWER TO LATHE.
2 OPERATE FEED LEVERS.
3 REMOVE FOUR LARGE ALLEN BOLTS FROM GEAR COVERS.
4 REMOVE GEAR COVERS.
5 TURN OFF POWER TO LATHE.
6 ADJUST FEED GEAR CLEARANCES.
7 TURN ON POWER TO LATHE.
8 CHECK FEED GEAR OPERATION.
9 TURN OFF POWER TO LATHE.
10 ADJUST LATHE CLUTCH.
11 REMOVE SCREWS TO CROSS SLIDE COVERS.
12 REMOVE CROSS SLIDE COVERS.
13 CRANK CROSS SLIDE FULL IN.
14 LUBE CROSS SLIDE WITH OIL CAN.
15 ADJUST CROSS SLIDE.
16 CRANK CROSS SLIDE FULL OUT.
17 LUBE CROSS SLIDE WITH OIL CAN.
18 ADJUST CROSS SLIDE.
19 INSTALL CROSS SLIDE COVERS.
20 INSTALL 4 SCREWS TO CROSS SLIDE COVERS.
21 TURN ON POWER TO LATHE.
22 CHECK FEED GEAR OPERATION.
23 TURN OFF POWER TO LATHE.
24 INSTALL FEED GEAR COVERS.

25 INSTALL FOUR ALLEN BOLTS TO COVERS.
26 FILL OUT REPAIR REPORT.

NT 019 1 METAL STAMP PARTS FOR REASSEMBLY IDENTIFICATION. * FOURTEEN JOINING SURFACES.
2 REMOVE COMPRESSOR PULLEY SHEAVE BOLT.
3 OBTAIN GEAR PULLER AND SET UP TO SHEAVE.
4 REMOVE PULLEY SHEAVE WITH PULLER.
5 DISASSEMBLE COMPRESSOR HEAD COOLER SYSTEM. TEN BOL TS.
6 REMOVE COMPRESSOR HEAD COOLER SYSTEM AND ASIDE.
7 DISCONNECT HEAD PRESSURE LINES TO REGULATOR AND AS IDE. FOUR FLARE NUTS.
8 DISCONNECT AIR INLET TO STORAGE TANK AND ASIDE. TH REE BOLTS.
9 LOOSEN CYLINDER HEAD BOLTS WITH WRENCH AND HAMMER.
10 REMOVE CYLINDER HEAD BOLTS WITH WRENCH.
11 REMOVE THREE CYLINDER HEADS AND ASIDE.
12 INSPECT CYLINDER WALLS.
13 TEST PISTONS FOR PLAY ON CRANKSHAFT.
14 OPEN OIL DRAIN PLUG AND DRAIN OIL INTO BUCKET.
15 LOOSEN CYLINDER BOLTS WITH WRENCH AND HAMMER.
16 REMOVE CYLINDER BOLTS WITH WRENCH.
17 REMOVE CONNECTING RODS FROM CRANKSHAFT. THREE RODS ; SIX BOLTS.
18 INSPECT PARTS:INSERTS, RINGS, PISTONS, CYLINDERS, HEADS, ETC.
19 ADDITIONAL WALKING AT JOB SITE. APPROXIMATLY 320 P ACES.

NT 020 1 MOVE MOTOR ON DOLLY TO TEST BENCH LOCATION. * 12 P ACES.
2 OBTAIN TOOLS AND EQUIPMENT FROM CABINET. * 12 ITEM S.
3 REMOVE AND REPLACE MOTOR LEADS COVER SCREWS.
4 REMOVE AND REPLACE MOTOR LEADS COVER.
5 CONNECT AND DISCONNECT MOTOR LEADS. * THREE EACH C YCLE, TWO CYCLES.
6 TEST RUN MOTOR AND CHECK WITH METER.
7 STAMP MOTOR CASE AND END BELLS WITH HAMMER AND PUN CH FOR REASSEMBLY IDENTIFICATION.
8 REMOVE AND REPLACE BEARING RETAINER SCREWS. * TWO SCREWS.
9 REMOVE AND REPLACE 2 BEARING RETAINERS WITH SCREW- DRIVER.
10 REMOVE AND REPLACE EIGHT END BELL BOLTS.
11 REMOVE AND REPLACE TWO END BELLS WITH HAMMER AND P UNCH.
12 SET UP AND INSTALL BEARING PULLER ON MOTOR SHAFT.
13 REMOVE BEARINGS WITH PULLER AND DISCARD.
14 CLEAN TWO END BELL RECESSES WITH SCREWDRIVER AND R AG.
15 CLEAN TWO END BELLS AND TWO BEARING HOUSINGS WITH RAG.
16 CLEAN TWO MOTOR WINDING ENDS WITH RAG.
17 REINSULATE MOTOR WINDING ENDS WITH INSULATING VARN ISH SPRAY. FIRST APPLICATION.
18 REINSULATE MOTOR WINDING ENDS WITH INSULATING VARN ISH SPRAY. ADDITIONAL APPLICATIONS.
19 HEAT 2 NEW BEARINGS ON ELECTRICAL BEARING HEATING CONE.
20 COOL MOTOR SHAFT ENDS WITH SPRAY FREON. FIRST APPL ICATION.
21 COOL 2 MOTOR SHAFT ENDS WITH SPRAY FREON. ADDITION AL APPLICATIONS.
22 POSITION, ALIGN AND SEAT TWO NEW BEARINGS ON MOTOR SHAFT.

23 REPLACE TWO END BELLS.
24 APPLY SPRAY LUBE (WD-40) TO BOLTS AND SCREWS. FIRS T ITEM.
25 APPLY SPRAY LUBE (WD-40) TO BOLTS AND SCREWS. ADDI TIONAL ITEMS.
26 MOVE MOTOR DOLLY TO PAINT SPRAY AREA . * 14 PACES.
27 CLEAN MOTOR HOUSING WITH RAG.
28 MASK OFF I.D. PLATE WITH TAPE.
29 SPRAY PAINT MOTOR HOUSING. FIRST APPLICATION.
30 SPRAY PAINT MOTOR HOUSING. ADDITIONAL APPLICATIONS

NT 021 1 REMOVE FOUR SCREWS ON PUMP BASE TO PUMP HOUSING.
2 REMOVE PUMP BASE.
3 REMOVE FOUR PUMP HOUSING PLATE SCREWS.
4 REMOVE PUMP HOUSING PLATE.
5 REMOVE IMPELLER SHAFT ASSEMBLY.
6 REMOVE PUMP BEARING.
7 REMOVE PUMP BEARING PACKING GLAND RETAINER.
8 REMOVE PUMP BEARING PACKING GLAND.
9 REMOVE PUMP BEARING PACKING SPRING AND WASHER.
10 WALK TO PARTS STORAGE CABINET AND RETURN. * 30 PAC ES EACH WAY.
11 GET MECHANICAL SEAL FROM PARTS CABINET.
12 UNPACK NEW MECHANICAL SEAL.
13 APPLY LIGHT GREASE TO SHAFT.
14 INSTALL MECHANICAL SEAL TO SHAFT.
15 TIGHTEN THREE SET SCREWS TO HOLD MECHANICAL SEAL.
16 INSTALL IMPELLER SHAFT WITH MECHANICAL SEAL IN PUM P.
17 INSTALL PUMP HOUSING PLATE.
18 INSTALL PUMP HOUSING PLATE SCREWS.
19 INSTALL PUMP BASE.
20 INSTALL PUMP BASE SCREWS TO HOUSING.

NT 022 1 GET GASKET MATERIAL.
2 FABRICATE PIPE FLANGE GASKET WITH GASKET CUTTER.
3 APPLY GRAPHITE TO GASKET.

NT 023 1 REMOVE SET SCREWS.
2 REMOVE SPRING.
3 ROTATE DRIVE BELT TO MOVE BLADE INTO POSITION FOR REMOVAL.
4 REMOVE BLADE.
5 INSERT NEW BLADE.
6 REINSTALL SPRING.
7 REINSTALL SET SCREWS.
8 TEST OPERATE MACHINE.

NT 024 1 REMOVE DOOR OR COVER PLATE.
2 REMOVE NUT HOLDING BLADE.
3 REMOVE BLADE FROM SHAFT.
4 REINSTALL BLADE ON SHAFT.
5 REINSTALL NUT HOLDING BLADE.
6 REINSTALL DOOR OR COVER PLATE.
7 CHECK BALANCE AND ALIGNMENT OF BLADE.

NT 025 1 LOOSEN JAM NUT.
2 REMOVE SCREWS HOLDING SWITCH FACE PLATE.
3 REMOVE FACE PLATE.
4 DISCONNECT WIRES.
5 REMOVE TOGGLE SWITCH JAM NUT.
6 REMOVE TOGGLE SWITCH.
7 INSTALL NEW TOGGLE SWITCH.
8 INSTALL JAM NUT.
9 CONNECT WIRES.
10 INSTALL FACE PLATE.
11 REINSTALL SCREWS.
12 CHECK SWITCH OPERATION.

NT 026 1 LIFT SLIDING DOOR ON SIDE OF HOUSING.
2 LIFT CLOTH SPRAY-SCREEN ON END OF HOUSING.
3 INSPECT WITH FLASHLIGHT BOTH TOP AND BOTTOM LEVELS OF CONVEYOR.
4 REMOVE OBSTRUCTION.
5 TEST RUN MACHINE.

NT 027 1 REMOVE FACE PLATE FROM BLADE.
2 REMOVE TOP BLADE GUARD.
3 REMOVE SIDE BLADE GUARD.
4 REMOVE SCREWS HOLDING BLADE TO SHAFT.
5 REMOVE BLADE.
6 INSTALL NEW BLADE.
7 INSTALL SCREWS HOLDING BLADE TO SHAFT.
8 INSTALL FACE PLATE.
9 INSTALL TOP BLADE GUARD.
10 INSTALL SIDE BLADE GUARD.
11 CHECK OPERATION OF SLICER.
12 MATERIALS HANDLING.

NT 028 1 TURN DOLLY ON SIDE.
2 INSPECT WHEELS FOR DAMAGE.
3 REMOVE WHEEL FROM CASTER ASSEMBLY.
4 CLEAN WHEEL WITH SOLVENT.
5 REMOVE BOLTS HOLDING WHEEL.
6 SEPARATE WHEEL HALVES.
7 REMOVE LOCK NUTS FROM HUB.
8 REMOVE WASHERS.
9 REMOVE BEARING RACES FROM SLEEVE.
10 REMOVE BEARING CAGES.
11 REMOVE OLD TIRE FROM WHEEL HALF.
12 PLACE NEW TIRE IN WHEEL ASSEMBLY.
13 BOLT WHEEL HALVES TOGETHER.
14 SCREW ONE BEARING RACE TO SLEEVE.
15 INSTALL BEARING CAGE ON RACE.
16 PACK BEARINGS.
17 INSERT SLEEVE IN WHEEL.
18 PACK BEARINGS.
19 INSTALL BEARING CAGE ON RACE.
20 INSTALL BEARING CAGE, AND RACE ASSEMBLY ON SLEEVE.
21 INSTALL WASHERS.
22 INSTALL LOCK NUTS.
23 INSTALL WHEEL ON DOLLY.
24 TIP DOLLY RIGHT SIDE UP.
25 CHECK OPERATION OF WHEEL.
26 MATERIAL HANDLING.

NT 029 1 LIFT CLOTH SPRAY SCREEN ON END OF HOUSING.
2 LIFT SLIDING DOOR ON SIDE OF HOUSING.
3 INSPECT MANIFOLD ASSEMBLY TO DETERMINE EXACT LOCATION AND EXTENT OF DAMAGE.
4 APPLY PENETRATING OIL TO AREA WHERE SPRAY TUBE FITS IN MANIFOLD.
5 REMOVE SPRAY TUBES.
6 REMOVE NUT ASSEMBLY HOLDING WATER MANIFOLD IN POSITION INSIDE OF SPRAY AREA.
7 REMOVE SPRAY MANIFOLD FROM INSIDE OF HOUSING.
8 REINSTALL SPRAY MANIFOLD INSIDE HOUSING.
9 REINSTALL NUT ASSEMBLY HOLDING WATER MANIFOLD IN POSITION.
10 REINSTALL SPRAY TUBES.
11 CHECK MANIFOLD ASSEMBLY FOR LEAKS, AND EFFECTIVE SPRAY ACTION BY TURNING ON AND OBSERVING SPRAY.
12 LOWER SIDE DOOR.

13 LOWER CLOTH SPRAY SCREENS AT END OF HOUSING.
14 MATERIAL HANDLING.

NT 030 1 REMOVE AND REINSTALL FILLISTER HEAD CAP SCREWS FRO M SHELL HOUSING.
2 REMOVE AND REINSTALL MOTOR ASSEMBLY INCLUDING SEAL HOUSING, AND ROTOR DOWNWARD FROM SHELL HOUSING.
3 REMOVE AND REINSTALL ROTOR SCREW.
4 REMOVE AND REINSTALL ROTOR ON MOTOR SHAFT.
5 REMOVE AND REINSTALL STATIONARY SEAT OF THE SEAL F ROM RECESS IN SEAL HOUSING.
6 REMOVE AND REINSTALL THE ROTATION SEAL FROM UNDERS IDE OF ROTOR.
7 REMOVE AND REINSTALL SOCKET HEAD CAP SCREWS.
8 REMOVE AND REINSTALL THE SEAL HOUSING.
9 REMOVE AND REINSTALL SLINGER.
10 CLEAN PARTS TO BE GREASED.
11 GREASE SEALS WITH VASELINE.
12 CHECK OPERATION OF GRINDER AFTER REINSTALLATION.

NT 031 1 REMOVE SET SCREWS.
2 REMOVE SPRINGS.
3 MOVE BLADE INTO POSITION FOR REMOVAL BY ROTATING D RIVE BELT.
4 REMOVE BLADES.
5 INSERT NEW BLADES.
6 REINSTALL SET SCREWS.
7 TEST OPERATE MACHINE.
8 MATERIAL HANDLING.

NT 032 1 GET GASKET MATERIAL.
2 MAKE MACHINE GASKET UP TO 2 SQ. FT. AREA BY SCRIBE , AND CUT WITH HAND SNIPS.
3 HOLLOW PUNCH 6 BOLT HOLES IN GASKET.
4 APPLY GRAPHITE TO GASKET.

NT 033 1 REMOVE 9/16" BOLT ON DOOR.
2 REMOVE AND REINSTALL 18" X 24" DOOR.
3 REMOVE AND REINSTALL SMALL SCREW HOLDING SHEETMETA L PLANEL ON TO REAR OF DOOR.
4 PRY CEMEMTED RUBBER GASKET (1/4" WIDE) FROM DOOR.
5 CLEAN OLD CEMENT AND CORROSION FROM UNDER OLD GASK ET AND SHEETMETAL PANEL.
6 CUT NEW GASKET.
7 APPLY NEW CEMENT ON DOOR FOR NEW GASKET.
8 INSTALL NEW GASKET.
9 COVER FRONT OF OVEN OPENING WITH SHEET OF PAPER.
10 CLOSE DOOR OVER SHEET OF PAPER.
11 TIGHTEN DOOR WITH TURN-WHEEL.
12 MATERIAL HANDLING.

NT 034 1 LOOSEN CLAMPS ON SIDE DOOR.
2 REMOVE SLIDE DOOR.
3 ATTACH ROPE SLING AROUND MAIN AXLE, WITH SQUARE KN OT.
4 SLIDE 4" X 4" X 6FT BEAM UNDER OVEN TRAY, AND THRO UGH ROPE SLING.
5 REMOVE BOLTS HOLDING TRAY TO INNER STABILIZER ARMS .
6 REMOVE TRAY FROM INSIDE OVEN AND SET ON FLOOR.
7 REMOVE SET SCREW AND CLAMP BOLT FROM OUTER STABILI ZER ARM.
8 REMOVE COTTER PIN FROM OUTER STABILIZER ARM.
9 DRIVE WEDGE INTO SPLIT CLAMP ON OUTER ARM.
10 REMOVE INNER AND OUTER STABILIZER ARMS.
11 REMOVE BUSHINGS FROM INNER, AND OUTER STABILIZER A RMS.

12 REMOVE ZERK FITTINGS.
13 RETAP ZERK FITTING HOLES.
14 DRILL LUBE HOLE IN BUSHINGS.
15 CLEAN BUSHINGS WITH SOLVENT.
16 INSPECT BUSHINGS.
17 CLEAN STABILIZER ARMS.
18 CLEAN NUTS, BOLTS AND ZERK FITTINGS WITH SOLVENT.
19 REINSTALL BUSHINGS.
20 REINSTALL ZERK FITTINGS.
21 REASSEMBLE INNER AND OUTER STABILIZER ARM ASSEMBLY
.
22 REINSTALL (L.H.) STABILIZER ARM.
23 REPOSITION OUTER STABILIZER ARM ON SPOKE.
24 REINSTALL OVEN TRAY.
25 INSTALL COTTER KEY ON OUTER STABILIZER ARM JOURNAL
.
26 ROTATE OVEN TO DETERMINE THAT TRAY WILL REMAIN LEV
EL WITHOUT VIBRATION.
27 ADJUST OUTER STABILIZER.
28 REMOVE SLING FROM MAIN AXLE.
29 REPOSITION DOOR.
30 FASTEN DOOR CLAMPS.
31 LUBRICATE ZERK FITTINGS.
32 MATERIALS HANDLING (BEAMS, ROPE AND PARTS).
33 FINAL CHECK RUN.

NT 035 1 GET GASKET MATERIAL.
2 MAKE (2) MACHINE GASKETS UP TO 2 SQ. FT. AREA BY P
EENING OUT WITH BALL-PEEN HAMMER.
3 APPLY GRAPHITE TO GASKETS.

NT 036 1 GET GASKET MATERIAL.
2 MAKE MACHINE GASKET OVER 2 SQ. FT. IN PROJECTED AR
EA BY SCRIBE, AND HAND SNIPS (8 SQ. FT. AVG.).
3 HOLLOW PUNCH 12 BOLT HOLES.
4 APPLY GRAPHITE TO GASKET.

NT 037 1 GET GASKET MATERIAL.
2 MAKE MACHINE GASKET OVER 2 SQ. FT. IN PROJECTED AR
EA BY PEENING OUT WITH BALL-PEEN HAMMER (8 SQ. FT.
3 APPLY GRAPHITE TO GASKETS

NT 038 1 TURN COMPRESSOR SWITCH OFF.
2 LOOSEN VALVE TO AIR LINE.
3 BLEED OFF AIR PRESSURE.
4 REMOVE SIX SCREWS ON FAN SHROUD.
5 REMOVE FAN SHROUD.
6 LOOSEN LOCKING SCREW ON FAN WHEEL WITH ALLEN WRENC
H.
7 LOOSEN MOTOR MOUNT BOLTS.
8 SLIDE MOTOR TO SLACK TENSION ON BELTS.
9 REMOVE TWO BELTS.
10 USE PLIERS TO REMOVE CRANKSHAFT WHEEL LOCK FROM FL
YWHEEL.
11 PULL WHEEL LOCK FROM FLYWHEEL.
12 ATTACH PULLER TO FLYWHEEL.
13 PULL FLYWHEEL FROM SHAFT WITH WHEEL PULLER.

NT 039 1 INSTALL FAN WHEEL ON END OF SHAFT.
2 INSTALL CRANKSHAFT WHEEL LOCK IN FLYWHEEL.
3 SLIP BELTS AROUND FAN WHEEL AND MOTOR. TWO BELTS.
4 SLIDE MOTOR TO TIGHTEN BELTS.
5 TIGHTEN FOUR MOTOR MOUNTING BOLTS.
6 TIGHTEN LOCKING SCREW ON FAN WHEEL WITH ALLEN WREN
CH.
7 INSTALL FAN SHROUD.
8 INSTALL SIX SCREWS TO FAN SHROUD.
9 TURN COMPRESSOR SWITCH ON.
10 CHECK COMPRESSOR OPERATION.

NT 040 1 INSTALL SPRING IN BODY.
2 INSTALL COPPER WASHER.
3 INSTALL VALVE PLATE IN VALVE GUIDE.
4 INSTALL VALVE SEAT IN VALVE GUIDE.
5 INSTALL VALVE GUIDE IN BODY.
6 INSTALL "O" RING ON PLUNGER GUIDE.
7 INSTALL PLUNGER GUIDE IN BODY.
8 INSTALL "O" RING ON PLUNGER.
9 INSTALL PLUNGER IN PLUNGER GUIDE.
10 INSTALL PLUNGER WITH BODY.
11 INSTALL VALVE ON COMPRESSOR.

NT 041 1 INSTALL ECCENTRICS.
2 INSTALL KEYS.
3 INSTALL CLAMPING CAP SCREWS.
4 INSTALL BEARING SPACERS.
5 INSTALL BEARINGS.

NT 042 1 BLOCK UP DRIVE OF ENGINE.
2 ADJUST CLUTCH.
3 LOOSEN CLUTCH SHIFTING YOKE.
4 REMOVE KEY FROM SHIFTING YOKE.
5 REMOVE CLUTCH SHIFTER SHAFT AND HANDLE.
6 REMOVE CLUTCH SHIFTING YOKE.
7 REMOVE NUTS ON STUDS HOLDING COMPRESSOR TO ENGINE HOUSING.
8 REMOVE HOLD DOWN BOLTS IN BACK OF COMPRESSOR OIL P OT.
9 REMOVE COMPRESSOR FROM DRIVE UNIT.

NT 043 1 REMOVE OR INSTALL TUBING FROM PRESSURE GAUGE TO OI L PUMP COVER.
2 REMOVE OR INSTALL OIL PUMP COVER SCREWS.
3 REMOVE OR INSTALL OIL PUMP SCREWS.
4 REMOVE OR INSTALL OIL PUMP COVER.
5 REMOVE OR INSTALL OIL PUMP COVER GASKET ON COVER.
6 REMOVE OR INSTALL RELIEF VALVE SPRING IN PISTON.
7 REMOVE OR INSTALL RELIEF VALVE PISTON IN FAN END C OVER.
8 REMOVE OR INSTALL PUMP BLADES.
9 REMOVE OR INSTALL PUMP ROTOR ON SHAFT.
10 REMOVE OR INSTALL KEY.
11 REMOVE OR INSTALL END PLATE IN FAN END COVER.
12 REMOVE OR INSTALL "O" RING ON END PLATE.

NT 044 1 ADJUST CLUTCH DRIVE.
2 INSTALL COMPRESSOR TO DRIVE UNIT.
3 INSTALL NUTS ON STUDS OF HOUSING.
4 INSTALL BOLTS IN BOTTOM OF OIL POT.
5 INSTALL CLUTCH YOKE.
6 INSTALL SHIFTER SHAFT INTO YOKE.
7 INSTALL KEY IN YOKE.
8 INSTALL YOKE CLAMP.
9 INSTALL FAN SHROUD.
10 INSTALL SCREWS IN FAN SHROUD.

NT 045 1 REMOVE VALVE FROM UNIT NUTS.
2 REMOVE ADJUSTABLE SEAT FROM BODY.
3 REMOVE SHIMS.
4 REMOVE VALVE FROM BODY.
5 REMOVE "O" RING FROM INSIDE BODY.
6 CLEAN PARTS.
7 INSPECT PARTS.

NT 046 1 APPLY GREASE TO PISTONS.
2 INSTALL GASKETS.
3 INSTALL CYLINDERS.
4 INSTALL CYLINDER HOLD-DOWN BOLTS.
5 USE RING COMPRESSOR TO DEPRESS RINGS.

NT 047 1 REMOVE TUBING FROM AIR HEAD.
2 REMOVE AIR HEAD SCREWS.
3 REMOVE AIR HEAD FROM CYLINDER.
4 REMOVE VALVE ASSEMBLY FROM CYLINDER.
5 REMOVE LOCK RING.
6 REMOVE INLET VALVE STOP PLATE.
7 REMOVE INLET VALVE SPRING.
8 REMOVE VALVE SEAT.
9 REMOVE DISCHARGE VALVE PLATE.
10 REMOVE DISCHARGE SPRING.
11 REMOVE COPPER WASHER.
12 CLEAN VALVE PARTS.
13 INSPECT VALVE PARTS.

NT 048 1 INSTALL GUIDE ON VALVE CYLINDER PLATE.
2 INSTALL DISCHARGE CHANNELS IN GUIDE. EACH GUIDE HA
S FOUR CHANNELS.
3 INSTALL SPRINGS IN DISCHARGE CHANNELS.
4 INSTALL SPRINGS IN INLET CHANNELS.
5 INSTALL INLET CHANNELS IN CYLINDER HOUSING.
6 INSTALL GUIDES.
7 INSTALL VALVE HEAD PLATE - LINE UP WITH CHANNELS.
8 INSTALL VALVE ASSEMBLY SCREWS. FOUR SCREWS EACH AS
SEMBLY.
9 CHECK VALVE ACTION.
10 INSTALL TOP GASKETS OVER VALVE/GUIDE.
11 INSTALL VALVE ASSEMBLY TO HEAD.
12 INSTALL HOLD-DOWN SCREWS AND STUD NUTS.
13 INSTALL TUBING AND INTERCOOLER TO HEAD.
14 INSTALL INLET AIR FILTER.
15 INSTALL FILTER RETAINER TO HEAD WITH THREE SCREWS.
16 INSTALL AIR HEAD TO CYLINDER.

NT 049 1 REMOVE AND REINSTALL CRANKCASE COVER.
2 CHECK CLEARANCE BETWEEN BEARING AND CRANKPIN, 3 PO
INTS.
3 REMOVE AND REINSTALL COTTER PIN.
4 REMOVE AND REINSTALL CASTLE NUT.
5 REMOVE AND REINSTALL WEDGE BOLT.
6 REMOVE AND REINSTALL WEDGE.
7 ROTATE ROTOR OR PULLEY BY HAND AS REQUIRED
8 REMOVE BRASS SHIMS.
9 CHECK AND MEASURE SHIMS.
10 PEEL SHIMS FOR CORRECT AMOUNT.
11 SPREAD GREASE ON SHIMS.
12 REINSTALL SHIMS IN PLACE.
13 CHECK CLEARANCE FINAL - CRANK PIN.
14 CHECK CLEARANCE OF CROSS HEAD BEARING.
15 LOOSEN LOCK NUT ON CROSSHEAD.
16 TIGHTEN SET SCREW ON CROSSHEAD.
17 BACK OFF SET SCREW.
18 TAP SET SCREW FOR PROPER CLEARANCE.
19 TIGHTEN LOCK NUT.
20 CHECK OPERATION OF COMPRESSOR AFTER ADJUSTMENTS.

NT 050 1 REMOVE AND REINSTALL CRANKCASE COVER.
2 REMOVE AND REINSTALL BOLTS.
3 SLIDE GLAND OFF AND ON.
4 UNFASTEN GARTER SPRINGS AND REFASTEN.
5 REMOVE AND REINSTALL WIPER RING SEGMENTS.
6 FIT RING SEGMENTS TO PISTON ROD.
7 CLEAN SPRINGS AND RINGS.
8 OIL PARTS.

NT 051 1 SET UP SIMPLE GAUGE.
2 CHECK END GAP OF ALL RINGS.
3 INSTALL RINGS.
4 CHECK RING SIDE CLEARANCE.
5 INSTALL PISTON ROD.
6 INSTALL PISTON PIN.
7 INSTALL LOCK RINGS ON PISTON PINS.

NT 052 1 REMOVE AND INSTALL TUBING TO AIR HEAD. *TWO TUBES WITH FOUR FITTINGS EACH.
2 REMOVE AND INSTALL AIR HEAD SCREWS. *TWO HEADS WIT H FOUR SCREWS EACH.
3 REMOVE AIR HEAD FROM CYLINDER.
4 CLEAN OFF AIR HEAD.
5 INSTALL AIR HEAD ON CYLINDER.
6 CHECK ALIGNMENT OF AIR HEAD.
7 REMOVE VALVE ASSEMBLY FROM AIR HEAD.
8 CLEAN VALVE ASSEMBLY.
9 REMOVE VALVE FROM VALVE ASSEMBLY.
10 INSTALL VALVE ON AIR HEAD.
11 REMOVE THREE SCREWS TO "O" RING ON VALVE.
12 REMOVE AND INSTALL "O" RING ON VALVE.
13 REMOVE INLET VALVE STOP PLATE.
14 CLEAN INLET VALVE.
15 INSTALL INLET VALVE STOP PLATE.
16 REMOVE INLET VALVE SPRING.
17 INSTALL INLET VALVE SPRING.
18 REMOVE VALVE SEAT.
19 INSTALL VALVE SEAT.
20 REMOVE DISCHARGE VALVE PLATE.
21 INSTALL DISCHARGE VALVE PLATE.
22 REMOVE DISCHARGE SPRING.
23 INSTALL DISCHARGE VALVE SPRING IN VALVE CAGE.
24 CHECK ACTION ON VALVE.
25 INSPECT VALVE PARTS.

NT 053 1 INSTALL COPPER GASKETS TO BOTTOM VALVES.
2 ASSEMBLE VALVE COVER TO BOTTOM VALVES.
3 LIFT VALVE AND COVER TO BOTTOM PORTS.
4 INSTALL BOLTS TO COVER.
5 TIGHTEN HOLD DOWN BOLTS TO SEAT VALVE.
6 TIGHTE LOCK NUTS ON VALVE COVER.
7 INSTALL TUBING SECTIONS.
8 TIGHTEN FLARE NUTS ON TUBING.
9 INSTALL COPPER GASKETS TO TOP VALVE PORTS.
10 INSTALL TOP VALVES.
11 INSTALL VALVE COVERS.
12 INSTALL BOLTS TO COVERS.
13 TIGHTEN HOLD DOWN BOLTS TO SEAT VALVE.
14 TIGHTEN LOCK NUTS ON VALVE COVER.

NT 054 1 REMOVE AND REINSTALL ONE PLUG AT EACH END OF CYLIN DER.
2 BAR OVER COMPRESSOR BY HAND.
3 INSERT AND REMOVE SOFT SOLDER WIRE THROUGH INDICAT OR HOLES.
4 CHECK SOLDER THICKNESS.
5 REMOVE AND REINSTALL CRANKCASE COVER.
6 LOOSEN PISTON LOCKNUTS.
7 JAM LOCKNUTS TOGETHER.
8 ADJUST PISTON ROD BY TURNING.
9 INSERT AND REMOVE SOFT SOLDER WIRE THROUGH INDICAT OR HOLES.
10 BAR OVER COMPRESSOR BY HAND.
11 CHECK THICKNESS OF WIRE.
12 LOOSEN NUTS.
13 LOCKNUTS AGAINST CROSSHEAD.

NT 055 1 INSTALL 2ND AND 3RD STAGE CONNECTING RODS, ON ECCE NTRICS ADJACENT TO FAN END COVER.
2 INSTALL FAN END COVER ON CRANKSHAFT.
3 ASSEMBLE AND INSTALL OIL PUMP AND OIL RELIEF VALVE .
4 INSTALL FAN END COVER GASKET.
5 INSTALL CRANKSHAFT WITH RODS, AND PUMP ATTACHED-IN FRAME.
6 INSTALL FAN END COVER SCREWS-LOOSE.
7 INSTALL PISTONS AND PISTON RINGS.
8 INSTALL 1ST AND 4TH STAGE CONNECTING ROD ON THEIR ECCENTRICS.
9 INSTALL SCREWS IN FAN END COVER.

NT 056 1 LOOSEN VALVE - BLEED ALL PRESSURE.
2 REMOVE TUBING FROM AIR HEAD.
3 REMOVE INLET AIR FILTER.
4 REMOVE CONSTANT SPEED UNLOADER.
5 REMOVE SCREWS AT INTERCOOLER HEADERS.
6 REMOVE AIR HEAD CAP SCREWS.
7 LOOSEN VALVE STUD NUTS.
8 REMOVE AIR HEAD FROM CYLINDER.
9 REMOVE VALVE STUD NUTS.
10 REMOVE VALVE ASSEMBLY FROM HEAD.
11 REMOVE SCREWS HOLDING VALVE PLATES TOGETHER.
12 REMOVE UPPER PLATE FROM LOWER.
13 REMOVE CHANNEL ASSEMBLIES.
14 REMOVE VALVE GUIDE PLATE.
15 CLEAN ALL VALVE PARTS.
16 INSPECT VALVE CHANNELS.

NT 057 1 LOOSEN LOCKNUT FROM VALVE COVER.
2 BACK OFF VALVE HOLD DOWN BOLT.
3 REMOVE COVER BOLTS.
4 REMOVE VALVE COVER.
5 REMOVE VALVE ASSEMBLY.
6 LOOSEN CYLINDER NUTS.
7 INSTALL WOOD BLOCKS IN CYLINDER AGAINST HEAD.
8 PULL OVER FLY WHEEL OR MOTOR ROTOR BY HAND.
9 AFTER BUMPING TO START HEAD OFF, USE KNIFE AROUND GASKET AND CYLINDER SURFACE TO FREE GASKET.
10 REMOVE CYLINDER NUTS.
11 REMOVE CYLINDER HEAD.
12 REMOVE PISTON ROD NUT.
13 LOOSEN LOCKNUT FROM VALVE COVER.
14 BACK OFF LOCKNUT FROM VALVE COVER.
15 BACK OFF HOLD DOWN BOLT.

16 REMOVE COVER BOLTS.
17 REMOVE VALVE COVER.
18 REMOVE VALVE ASSEMBLY.
19 INSTALL WOOD BLOCKS IN CYLINDER AGAINST HEAD, AND PISTON.
20 PULL OVER FLYWHEEL OR MOTOR ROTOR BY HAND.
21 AFTER PISTON HAS BROKEN LOOSE FROM PISTON ROD - REMOVE BY SCREWING LIFTING "EYES" IN PISTON.
22 REMOVE BASKET.

NT 058 1 REMOVE TUBING FROM AIR HEAD.
2 REMOVE SCREWS AT INTERCOOLER HEADERS.
3 REMOVE HOLD DOWN BOLTS.
4 REMOVE CYLINDERS.
5 REMOVE PISTON PIN LOCK RING.
6 REMOVE PISTON PIN.
7 REMOVE PISTON.
8 REMOVE PISTON RINGS.
9 CLEAN PARTS.
10 INSPECT PARTS.

NT 059 1 REMOVE, DISASSEMBLE, CLEAN AND INSPECT 1ST AND 2ND STAGE VALVES. REMOVE INLET AIR FILTER AND AIR HEA
2 ASSEMBLE AND INSTALL 1ST AND 2ND STAGE VALVES. INS TALL INLET AIR FILTER AND AIR HEADS.

NT 060 1 LOOSEN LOCKNUTS ON VALVE.
2 BACK OFF VALVE HOLD DOWN BOLTS.
3 REMOVE VALVE COVER BOLTS.
4 MARK VALVE COVERS FOR IDENTIFICATION.
5 REMOVE VALVE COVERS.
6 REMOVE DISCHARGE VALVE ASSEMBLY.
7 MARK VALVES FOR IDENTIFICATION.
8 REMOVE COPPER GASKETS.
9 LOOSEN FLARE NUTS ON UNLOADER TUBING.
10 REMOVE TUBING SECTIONS.
11 LOOSEN LOCKNUTS ON VALVE COVERS.
12 BACK OFF HOLD DOWN BOLTS.
13 MARK VALVE COVERS FOR IDENTIFICATION.
14 REMOVE VALVE COVER BOLTS.
15 REMOVE VALVE COVERS.
16 REMOVE INLET VALVE ASSEMBLY.
17 REMOVE COPPER GASKETS.
18 CLEAN VALVE PORTS.

NT 061 1 REMOVE COMPRESSOR SHIFTER, AND YOKE FROM DRIVE UNI T.
2 REMOVE FANWHEEL.
3 REMOVE PISTONS, CYLINDERS, PISTONS RINGS. CLEAN A ND INSPECT PARTS.
4 REMOVE INTERCOOLERS SCREWS.
5 REMOVE AFTERCOOLERS SCREWS.
6 REMOVE BOTH END COVERS SCREWS.
7 REMOVE 1ST AND 4TH STAGE CONNECTING RODS.
8 REMOVE CRANKSHAFT WITH 2ND AND 3RD STAGE CONNECTIN G RODS.
9 CLEAN PARTS.
10 INSPECT PARTS.

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NT  062  1 REMOVE, DISASSEMBLE, REASSEMBLE AND INSTALL 1ST AN
           D 2ND STAGE VALVES.  CLEAN AND INSPECT PARTS. REMO
         2 REMOVE, DISASSEMBLE, REASSEMBLE AND INSTALL 3RD AN
           D 4TH STAGE VALVES.  CLEAN AND INSPECT PARTS. REMO

NT  063  1 REMOVE CONNECTING RODS FROM FOUR-CYLINDER COMPRESS
           OR.  REMOVE COMPRESSOR FROM DRIVE UNIT, FANWHEEL,
         2 REMOVE MAIN BEARINGS.
         3 REMOVE CRANKSHAFT BEARING SPACERS.
         4 REMOVE SCREWS FROM ECCENTRIC CLAMPS.
         5 REMOVE ECCENTRICS.

NT  064  1 ASSEMBLE CRANKSHAFT.
         2 INSTALL CRANKSHAFT AND CONNECTING RODS.
         3 INSTALL FOUR CYLINDERS.
         4 ASSEMBLE AND INSTALL 1ST AND 2ND STAGE VALVES. ASS
           EMBLE AND INSTALL 3RD AND 4TH STAGE VALVES BELOW).
         5 INSTALL DISCHARGE VALVE SPRINGS IN VALVE CAGE.
         6 INSTALL DISCHARGE VALVE PLATES.
         7 INSTALL COPPER WASHER.
         8 INSTALL VALVE SEAT.
         9 INSTALL INLET VALVE SPRING.
        10 INSTALL INLET VALVE STOP PLATE.
        11 INSTALL LOCK RING.
        12 CHECK ACTION ON VALVE.
        13 INSTALL COPPER WASHER IN HEAD.
        14 INSTALL "O" RING ON VALVE.
        15 INSTALL VALVE ON AIR HEAD.
        16 INSTALL AIR HEAD ON CYLINDER.
        17 INSTALL SCREWS ON AIR HEAD.
        18 CHECK ALIGNMENT OF AIR HEAD.
        19 INSTALL TUBING TO AIR HEAD AND CYLINDERS.
        20 ASSEMBLE AND INSTALL OTHER VALVES.
        21 INSTALL FAN WHEEL AND SHROUD.
        22 INSTALL COMPRESSOR TO DRIVE UNIT.

NT  065  1 REMOVE SCREWS HOLDING CRAB TO VALVE BODY.
         2 REMOVE CRABS FROM VALVE.
         3 REMOVE SCREWS HOLDING VALVE SECTIONS TOGETHER.
         4 MARK VALVE HALVES FOR IDENTIFICATION.
         5 SEPARATE VALVE SECTIONS.
         6 REMOVE CHANNELS AND SPRINGS.
         7 CLEAN VALVE SECTIONS.
         8 INSPECT AND CHECK VALVE SURFACES.
         9 SET ASIDE PITTED OR WORN VALVES.
        10 REINSTALL NEW CHANNELS AND SPRINGS IN THREE VALVES
           .
        11 REASSEMBLE VALVE SECTIONS.
        12 REINSTALL SCREWS IN VALVE HALVES.
        13 REINSTALL CRABS TO VALVES.
        14 REINSTALL SCREWS TO CRABS.
        15 CHECK VALVE OPERATION BY DEPRESSING CHANNELS, AND
           SPRINGS.
        16 REMOVE GUIDES FROM DEFECTIVE VALVES.
        17 REFACE THREE VALVES AT SHOP LAPPING OF VALVES NOT
           INCLUDED.
        18 REINSTALL GUIDES TO MACHINED VALVES.
        19 CUT AND INSTALL NEW DOWELS TO REPLACE BENT DOWELS
           IN GUIDES.
        20 REINSTALL CHANNELS AND SPRINGS IN THREE VALVES.
        21 REASSEMBLE VALVE SECIONS.
        22 REINSTALL CRABS TO VALVES.
        23 REINSTALL SCREWS TO CRABS.
        24 CHECK VALVE OPERATION BY DEPRESSING CHANNELS, AND
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SPRINGS.

NT 066 1 REMOVE CYLINDER HEAD PISTON ASSEMBLY, AND THREE VA
LVES.
2 REMOVE PISTON RINGS FROM PISTON.
3 CHECK NEW PISTON RINGS IN BASE, FOR PROPER CLEARAN
CE.
4 PICK UP FILE AND SET ASIDE.
5 INSPECT, FEEL WITH FINGERS.
6 BLOW OFF PART.
7 CLEAN PISTONS AND GROOVES.
8 CLEAN INTERIOR OF CYLINDER.
9 CHECK CLEARANCE OF RINGS IN PISTON GROOVES.
10 OIL GROOVES.
11 INSTALL PISTON RINGS.
12 OIL INTERIOR OF CYLINDER.
13 INSTALL PISTON TO ROD AND CYLINDER.
14 INSTALL NUT TO PISTON.
15 REMOVE WOOD BLOCKS.
16 PULL OVER FLYWHEEL OR ROTOR BY HAND (MOVING PISTON
TO FRONT OF CYLINDER).
17 LOCK NUT BY CENTER PUNCHING TO THREAD.
18 CLEAN CYLINDER FACE.
19 CLEAN HEAD.
20 SPREAD GREASE OR OTHER MATERIAL ON CYLINDER GASKET
SURFACES (2 SIDES).
21 INSTALL HEAD GASKET.
22 INSTALL CYLINDER HEAD.
23 INSTALL NUTS TO CYLINDER HEAD.
24 PULL OVER FLYWHEEL OR ROTOR BY HAND.
25 CHECK END CLEARANCE.
26 INSTALL VALVES.
27 INSTALL VALVE COVERS.
28 INSTALL COVER BOLTS.
29 TIGHTEN HOLD DOWN BOLTS.
30 TIGHTEN LOCK NUT ON VALVE COVER.

NT 067 1 REMOVE AND INSTALL 1" BOLTS ON CAP.
2 REMOVE AND INSTALL CAP ON TOP OF LOAD BEARING.
3 REMOVE AND INSTALL 1" BOLTS ON BASE.
4 REMOVE AND INSTALL BASE.
5 REMOVE AND INSTALL BOLTS ON 1ST SHIELD.
6 REMOVE AND INSTALL SHIELD.
7 REMOVE AND REPLACE ARMATURE.
8 ADJUST LOAD BEARING TO COMPENSATE FOR ARMATURE WEI
GHT.
9 ADJUST ARMATURE ONTO SHAFT.
10 TIGHTEN NUTS ON ARMATURE.
11 ADDITIONAL ADJUSTMENT TO LOAD BEARING FOR FINAL SE
TTING.
12 DISCONNECT AND CONNECT FIVE NIPPLES.
13 REMOVE AND INSTALL BOLTS ON 2ND SHIELD.
14 REMOVE AND INSTALL SHIELD.
15 ADJUST TENSION ON PULLEY BELT.
16 REMOVE AND INSTALL BOLTS FROM OIL BOX.
17 REMOVE AND INSTALL OIL BOX.
18 REMOVE AND INSTALL NIPPLES ON PIPE.
19 REMOVE AND INSTALL PIPE AROUND COMPRESSOR.
20 REMOVE AND INSTALL TWO BOLTS AND NUTS ON GROUND WI
RE.
21 REMOVE AND INSTALL GROUND WIRE.
22 REMOVE AND INSTALL BOLTS ON OIL CAN STAND.
23 REMOVE AND INSTALL OIL CAN STAND.
24 REMOVE AND INSTALL SET SCREWS IN PULLEY.
25 REMOVE AND INSTALL PULLEY.
26 REMOVE AND INSTALL BOLTS IN FOUR PIECES.

27 REMOVE AND INSTALL FOUR PIECES.
28 REMOVE AND INSTALL SCREWS IN BRACKET HOLDER.
29 REMOVE AND INSTALL BRACKET HOLDER.
30 REMOVE AND INSTALL SIX NUTS ON COLLAR TO FLANGE.
31 REMOVE AND INSTALL COLLAR ON OUTSIDE OF FLANGE.
32 REMOVE AND INSTALL TWO SEALS.
33 REMOVE AND INSTALL PIPE ON TOP OF FLANGE.
34 REMOVE AND INSTALL FOUR ALLEN SCREWS.
35 REMOVE AND INSTALL COLLAR ON SHAFT UNDER FLANGE.
36 REMOVE AND INSTALL NUTS FROM AROUND FLANGE.
37 POSITION COLLAR AROUND SHAFT.
38 REMOVE AND INSTALL FLANGE.

NT 068 1 INSTALL FOUR-CYLINDERS AND GASKETS. BOLT TO CRANK CASE OF FOUR-CYLINDER COMPRESSOR. DEPRESS RINGS
2 REMOVE AND DISASSEMBLE CRANKSHAFT. REMOVE COMPRES SOR FROM DRIVING UNIT. REMOVE FANWHEEL, CYLINDERS
3 DISASSEMBLE, CLEAN AND INSPECT 1ST AND 2ND STAGE V ALVES.
4 DISASSEMBLE, CLEAN AND INSPECT 3RD AND 4TH STAGE V ALVES.

NT 069 1 REMOVE COMPRESSOR FROM DRIVE UNIT. REMOVE FAN WHE EL. REMOVE CRANKSHAFT AND CONNECTING RODS, DISASS
2 ASSEMBLE CRANKSHAFT, INSTALL CRANKSHAFT AND CONNEC CONNECTING RODS, INSTALL CYLINDERS. ASSEMBLE AN

NT 070 1 REMOVE SIX DISCHARGE AND SIX INLET VALVES AND CLEA N TWELVE PORTS.
2 DISASSEMBLE AND REASSEMBLE SIX DISCHARGE OR INLET VALVES, CLEAN VALVES, CHANGE CHANNELS AND SPRINGS
3 REINSTALL SIX DISCHARGE AND SIX INLET VALVES, AFTE R OVERHAUL OF VALVES.
4 HANDLING TIME FOR MOVING VALVES TO SHOP, AND BACK TO JOB.

NT 071 1 REMOVE SIX DISCHARGE AND SIX INLET VALVES, CLEAN T WELVE PORTS.
2 DISASSEMBLE AND REASSEMBLE SIX DISCHARGE OR INLET VALVES, CLEAN VALVES, CHANGE CHANNELS AND SPRINGS
3 REINSTALL SIX DISCHARGE AND SIX INLET VALVES, AFTE R OVERHAUL OF VALVES.
4 HANDLING TIME FOR MOVING VALVES TO SHOP AND BACK T O JOB.

NT 072 1 RUN REMOTE CONTROL MOTOR, AND DRIVE TO HIGH SPEED POSITION AND STOP.
2 LOOSEN LOCK NUT ON HIGH SPEED STOP.
3 TIGHTEN SET SCREW UNTIL IT TOUCHES SHIFTING YOKE.
4 REMOVE CAP SCREWS FROM MOTOR GEAR CASE FLANGE.
5 REMOVE MOTOR GEAR CASE ASSEMBLY.
6 REMOVE SCREWS FROM CONTROL BOX COVER.
7 REMOVE COVER FROM CONTROL BOX.
8 REMOVE SCREWS HOLDING CONTROL BOX TO CONTROL CASE.
9 REMOVE CONTROL BOX FROM CONTROL CASE.
10 INSTALL A CLAMPING WASHER ON CONTROL CASE.
11 INSTALL SCREWS TO HOLD CLAMPING WASHER.
12 INSTALL 5" CONTROL WHEEL ON END OF SHAFT.
13 TIGHTEN SET SCREW IN WHEEL.

NT 073 1 REMOVE SCREWS FROM LOUVERED COVER.
2 REMOVE LOUVRED COVER.
3 REMOVE CAP SCREWS FROM END COVER.
4 REMOVE END COVER.
5 ROTATE CONTROL WHEEL UNTIL DRIVEN ADJUSTABLE PULLE Y PINCHES BELT, AND BACK OFF SLIGHTLY.
6 REMOVE COTTER PINS FROM YOKE PINS.
7 REMOVE YOKE PINS.
8 LOOSEN SET SCREW LOCKING CONTROL CASE IN BAYONET F IT.
9 REMOVE SCREWS HOLDING PLATE.
10 REMOVE SECTION COVER PLATE ON FLANGE OF CONTROL CA SE.
11 ROTATE CONTROL CASE AND TURN CONTROL WHEEL TO HIGH SPEED, AND DISENGAGE FROM CONTROL HUB OF DRIVEN P
12 REMOVE CONTROL CASE FROM STAND.
13 MEASURE AND NOTE DISTANCE FROM HUB DRIVEN PULLEY T

O END OF SHAFT.
14 LOOSEN SET SCREWS ON HUB, OF DRIVER ADJUSTABLE PUL
LEY.
15 REMOVE DRIVER PULLEY HALF.
16 PASS BELT AROUND END OF MOTOR SHAFT AND THROUGH OP
ENING AROUND CONTROL HUB.

NT 074 1 REMOVE SCREWS FROM LOUVRED COVER.
2 REMOVE LOUVRED COVER.
3 REMOVE CAP SCREWS FROM END COVER.
4 REMOVE END COVER.
5 ROTATE SPEED CONTROL UNTIL DRIVEN ADJUSTABLE PULLE Y PINCHES BELT.
6 REMOVE COTTER PINS FROM YOKE PINS.
7 REMOVE YOKE PINS.
8 REMOVE SHIFTING YOKE.
9 MEASURE AND NOTE DISTANCE FROM HUB OF DRIVEN PULLE Y TO END OF SHAFT.
10 LOOSEN SET SCREWS IN HUB OF DRIVEN PULLEY.
11 REMOVE DRIVEN PULLEY HALF.
12 LOOSEN SET SCREW LOCKING MOTOR ADAPTER PLATE IN PL ACE.
13 ROTATE MOTOR ASSEMBLY IN CASE AND WITHDRAW FROM CA SE.

NT 075 1 INSERT BELT IN OPENING AROUND CONTROL HUB, PASS BE TWEEN PULLEYS AND PLACE IN DRIVEN PULLEY.
2 PULL UP ON BELT EXPANDING THE ADJUSTABLE DRIVEN PU LLEY TO MINIMUM DIAMETER.
3 PASS BELT OVER END OF DRIVER SHAFT.
4 INSTALL DRIVER PULLEY HALF.
5 CHECK END OF SHAFT DIMENSION TO HUB OF DRIVER PULL EY.
6 TIGHTEN SET SCREWS IN HUB.
7 INSTALL CONTROL CASE OVER CONTROL HUB HOLDING INDI CATOR TO LOW.
8 ROTATE CONTROL WHEEL AND CONTROL CASE TO ORIGINAL ALIGNMENT.
9 INSTALL SHIFTING YOKE.
10 INSTALL YOKE PINS.
11 INSTALL COTTER PINS.
12 ADJUST CONTROL WHEEL TO FIT PINS.
13 TIGHTEN SET SCREW WHICH LOCKS CONTROL CASE IN POSI TION.
14 TIGHTEN LOCK NUT.
15 CHECK OPERATION OF BELT, PULLUP AND CONTROLS.
16 INSTALL END COVER.
17 INSTALL CAP SCREWS.
18 INSTALL LOUVRED COVER.
19 INSTALL SCREWS.

NT 076 1 START DRIVE MOTOR AND TURN HAND CONTROL WHEEL (INS TALLED TEMPORARY) TO HIGH SPEED.
2 CHECK HIGH SPEED WITH THAT ON NAMEPLATE USING TACH OMETER.
3 ADJUST TO EXACT SPEED USING SET SCREW AND LOCK NUT AND HAND CONTROL WHEEL.
4 LOOSEN SET SCREW IN CONTROL WHEEL.
5 REMOVE HAND CONTROL WHEEL.
6 REMOVE SCREWS HOLDING CLAMPING WASHER.
7 REMOVE CLAMPING WASHER.
8 INSTALL CONTROL BOX ON CONTROL CASE.
9 INSTALL SCREWS HOLDING CONTROL BOX.
10 INSTALL KEY TO KEY WAY IN SHAFT.
11 INSTALL CONTROL MOTOR GEAR CASE TO CONTROL CASE.
12 INSTALL CAP SCREWS.
13 ADJUST SET SCREW AND LOCKNUT TO TRIP LIMIT SWITCH BEFORE MECHANICAL STOPS ARE REACHED.
14 CHECK MECHANICAL STOPS FOR CORRECT SETTING.
15 RUN CONTROL MOTOR AND DRIVE OVER ENTIRE SPEED RANG E AND RECHECK HIGH AND LOW SPEEDS.

16 INSTALL COVER ON CONTROL BOX.
17 INSTALL SCREWS HOLDING COVER.

NT 077 1 REMOVE BELT FROM VARIABLE SPEED TEST STAND.
2 INSTALL BELT TO VARIABLE SPEED TEST STAND.

NT 078 1 REMOVE REMOTE SPEED CONTROL DEVICE FROM VARIABLE S
PEED TEST STAND.
2 INSTALL REMOTE SPEED CONTROL DEVICE TO VARIABLE SP
EED TEST STAND. ADJUST AND CHECK SPEED SETTINGS.

NT 079 1 REMOVE REMOTE SPEED CONTROL DEVICE FROM VARIABLE S
PEED TEST STAND.
2 REMOVE BELT FROM VARIABLE SPEED TEST STAND.

NT 080 1 INSTALL MOTOR TO TEST STAND CASE.
2 TIGHTEN SET SCREW LOCKING MOTOR ADAPTER PLATE IN P
LACE.
3 INSTALL SHIFTING YOKE.
4 INSTALL YOKE PINS.
5 INSTALL COTTER PINS.
6 ADJUST CONTROL WHEEL IN ASSEMBLING PINS AND YOKE.
7 PULL UP ON BELT EXPANDING THE ADJUSTABLE DRIVEN PU
LLEY TO MINIMUM DIAMETER.
8 PASS BELT OVER END OF DRIVER SHAFT.
9 INSTALL DRIVER PULLEY HALF.
10 CHECK DIMENSION FROM END OF SHAFT TO HUB OF PULLEY
11 TIGHTEN SET SCREWS IN HUB.
12 CHECK OPERATION OF BELT, PULLEYS AND CONTROL.
13 ADJUST EXACT SPEED BY USING SET SCREW, LOCKNUT AND
CONTROL WHEEL.
14 CHECK HIGH SPEED WITH THAT ON NAMEPLATE USING TACH
OMETER.
15 RUN TEST STAND OVER ENTIRE SPEED RANGE AND RECHECK
HIGH AND LOW SPEEDS.
16 INSTALL LOUVRED COVER.
17 INSTALL SCREWS.
18 INSTALL END COVER.
19 INSTALL CAP SCREWS.

NT 081 1 INSTALL BELT TO VARIABLE SPEED TEST STAND.
2 INSTALL REMOTE ELECTRIC SPEED CONTROL DEVICE. ADJU
ST AND CHECK SPEED SETTINGS.

NT 082 1 REMOVE DRIVE MOTOR FROM VARIABLE SPEED TEST STAND.
2 INSTALL DRIVE MOTOR TO VARIABLE SPEED TEST STAND.
ADJUST AND CHECK SPEEDS.

NT 083 1 GET TOOLS READY FOR JOB.
2 OPEN AND CLOSE DOOR ON SIDE OF SAW CABINET.
3 REMOVE TWO LARGE NUTS HOLDING BAND SAW WHEELS.
4 ATTACH PULLER TO UPPER WHEEL.
5 ADJUST PULLER ARMS.
6 PULL TOP WHEEL WITH WHEEL PULLER.
7 ATTACH PULLER TO BOTTOM WHEEL.
8 PULL BOTTOM WHEEL WITH WHEEL PULLER.
9 CARRY TWO BAND SAW WHEELS FROM JOB SITE TO TRUCK.
10 CARRY BAND SAW WHEELS FROM TRUCK TO WORKBENCH. *2
MEN. 40 PACES
11 CUT EACH BAND SAW TIRE IN TWO PLACES. TWO WHEELS.
12 PEEL OFF RUBBER TIRES FROM TWO BAND SAW WHEELS.
13 CLEAN EXCESS CEMENT FROM RIM OF WHEELS.
14 WIRE BRUSH WHEEL RIMS.
15 WIPE RIMS WITH RAG DIPPED IN SOLVENT.
16 WIPE RIMS DRY WITH RAGS.
17 APPLY CEMENT TO RIM FROM TUBE WITH BRUSH.
18 CLAMP WHEEL TO BENCH WITH 2 "C" CLAMPS.

19 STRETCH TIRE OVER WHEEL AND ALIGN WITH SOFT HAMMER
.
20 WIPE EXCESS CEMENT AND LEAVE WHEELS TO DRY OVER- N
IGHT.
21 AFTER CEMENT DRIES OVERNIGHT, SPOT CEMENT FROM TUB
E INTO ANY GAPS BETWEEN TIRE AND RIM.
22 TRIM RUBBER TIRES WITH RAZOR KNIFE AS REQUIRED.
23 DIP AND CLEAN MISC. SMALL SAW PARTS IN CLEANING TA
NK.
24 CARRY WHEELS TO TRUCK. *TWO MEN. 40 PACES.
25 CARRY TOOLS TO TRUCK. *TWO MEN. 40 PACES.
26 CARRY TOOLS FROM TRUCK TO JOB SITE. *TWO MEN. 50 P
ACES.
27 CARRY BAND SAW WHEELS FROM TRUCK TO JOB SITE. *TWO
MEN. 50 PACES.
28 OPEN AND CLOSE DOOR ON SIDE OF SAW CABINET.
29 INSTALL BOTTOM WHEEL.
30 INSTALL NUT TO HOLD WHEEL.
31 INSTALL UPPER SAW HEAD ASSEMBLY.
32 INSTALL BRACKETS AND HOLDERS TO HEAD ASSEMBLY.
33 INSTALL GUIDES AT HEAD ASSEMBLY.
34 CLEAN TRACKS WITH RAG.
35 LUBRICATE TRACKS WITH OIL CAN.
36 ADJUST TENSION SPRING.
37 INSTALL UPPER GUARD TO SAW.
38 BOLT GUARD IN PLACE.
39 INSTALL UPPER WHEEL.
40 INSTALL NUT TO HOLD UPPER WHEEL.
41 INSTALL SMALL TABLE.
42 INSTALL TWO BOLTS TO HOLD TABLE.
43 INSTALL UPPER HOLD DOWN BOLT.
44 ADJUST HOLD DOWN BOLT LENGTH.
45 INSTALL BAND SAW BLADE.
46 APPLY TENSION TO BLADE.
47 INSTALL SAW BLADE GUIDES.
48 RUN BLADE BY HAND AND ADJUST TENSION.
49 ADJUST TENSION SCREW AS REQUIRED.
50 START BAND SAW AND OBSERVE OPERATION.
51 ADJUST SAW GUIDES.
52 RESTART SAW AND OBSERVE OPERATION.
53 CUT SCRAP WOOD TO CHECK SAW OPERATION. * APPROXIMA
TELY 24 INCHES CUT.
54 CARRY TOOLS TO TRUCK. *TWO MEN. 50 PACES.
55 CARRY TOOLS FROM TRUCK TO SHOP. *TWO MEN. 50 PACES
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NT 084 1 OBTAIN FORKLIFT WITH WORK PLATFORM AND RETURN TO C HARGING LOCATION.
2 POSITION FORKLIFT AT WORK LOCATION.
3 UNCOIL AND COIL EXTENSION LIGHT.
4 CLIMB IN OR OUT OF WORK PLATFORM.
5 FASTEN OR UNFASTEN SAFETY CHAIN.
6 RAISE OR LOWER WORK PLATFORM. * AVERAGE OF 15 FEET .
7 REMOVE 1/4 INCH SET SCREW WITH ALLEN WRENCH.
8 REMOVE CLUTCH ASSEMBLY FROM DRIVE SHAFT AND SET AS IDE. TAP WITH HAMMER.
9 REMOVE WOODRUFF KEY FROM SHAFT AND ASIDE. USE PUNC H AND HAMMER.
10 DISCONNECT MASTER LINK IN DRIVE CHAIN WITH PLIERS.
11 REMOVE DRIVE CHAIN AND SET ASIDE.
12 REMOVE DRIVE CHAIN SPROCKET AND SET ASIDE. TAP WIT H HAMMER.
13 REMOVE DRIVE SHAFT SLEEVE BY HAND FROM BROKEN SHAF T.
14 REMOVE BROKEN HALVES OF DRIVE SHAFT, TYPICAL 5/8 I NCH X 14 INCHES. DRIVE OUT WITH HAMMER AND PUNCH.
15 WIPE GREASE FROM PARTS WITH RAGS.
16 INSTALL NEW DRIVE SHAFT.
17 INSTALL DRIVE SHAFT SLEEVE TO NEW SHAFT.
18 INSTALL DRIVE CHAIN SPROCKET.
19 INSTALL DRIVE CHAIN.
20 CONNECT MASTER LINK IN DRIVE CHAIN.
21 INSTALL WOODRUFF KEY
22 INSTALL CLUTCH ASSEMBLY.
23 INSTALL 1/4 INCH SET SCREW IN CLUTCH ASSEMBLY.

NT 085 1 SHUT OFF POWER TO PUNCH AND TAG SWITCH PRIOR TO MA INTENANCE.
2 UNPACK NEW PUNCHES AND DIES.
3 REMOVE FIVE SCREWS SECURING TABLE BED.
4 REMOVE MACHINE TABLE. TWO MEN.
5 REMOVE PUNCH ASSEMBLIES FROM TURRET.
6 REMOVE DIE SETS FROM TURRET.
7 REMOVE PUNCH FROM HOLDER.
8 INSTALL NEW PUNCH IN HOLDER.
9 INSTALL PUNCH ASSEMBLY IN TURRET.
10 INSTALL DIE IN TURRET.
11 ALIGN PUNCH TO DIE IN TURRET.
12 REMOVE TAG AND TURN ON POWER TO MACHINE.
13 POSITION SCRAP METAL TO PUNCH FOR TEST OPERATION.
14 PUNCH HOLE IN SCRAP WITH PUNCH.
15 DISENGAGE SCRAP METAL FROM PUNCH AND DIE.
16 CHECK HOLE IN SCRAP FOR ALIGNMENT AND SHARPNESS.
17 ROTATE TURRET AND CHECK OPERATION.
18 REPLACE MACHINE TABLE. TWO MEN.
19 REPLACE FIVE SET SCREWS IN MACHINE TABLE.
20 OPERATE PUNCH AND CHECK OPERATION.
21 PICK UP AND CLEAR AWAY SCRAP METAL, PACKAGING, AND TOOLS AFTER COMPLETING JOB.

NT 086 1 VISUALLY INSPECT PUMP.
2 TEST RUN PUMP AND TROUBLESHOOT.
3 APPLY PENETRATING OIL TO FOUR NUTS HOLDING SUMP CO VER.
4 REMOVE FOUR NUTS ON STUDS HOLDING SUMP COVER.
5 REMOVE SUMP COVER.
6 WITH PUMP RUNNING OBSERVE FLOAT ACTION.
7 OPEN AND CLOSE INLET AND DISCHARGE VALVES TO CHECK OPERATION OF EACH.
8 REMOVE TWO SCREWS FROM ELECTRICAL COVER.
9 REMOVE COVER TO ELECTRICAL CONTACTS.
10 CLEAN CONTACTS WITH FILE AND EMORY CLOTH.
11 REPLACE ELECTRICAL COVER.
12 REPLACE TWO COVER SCREWS.
13 CLOSE INLET AND OPEN DISCHARGE VALVES.
14 PUMP OUT SUMP.
15 LOOSEN SCREW HOLDING FLOAT ROD TO SWITCH.
16 REMOVE FOUR BOLTS AT BASE OF FLOAT SHAFT.
17 TAP BASE LOOSE FROM DECK WITH HAMMER AND REMOVE.
18 LOOSEN TWO BOLTS AND NUTS AT ELECTRICAL BOX.
19 LOOSEN NUT AT CONDUIT TO ELECTRICAL BOX.
20 BEND ELECTRICAL BOX OUT OF WAY.
21 IN SHOP, SCRAPE OLD GASKET FROM BASE WITH PUTTY KN IFE.
22 LAYOUT AND FABRICATE NEW GASKET WITH BALLPEEN HAMM ER.
23 CLEAN THREADS IN BASE FOR NEW PIPE.
24 WALK 200 PACES ROUND TRIP TO SUPPLY ROOM FOR NEW P IPE.
25 WRAP PIPE THREADS WITH TEFLON TAPE; FOUR PLACES.
26 GET STOPS FOR FLOAT FROM PARTS DRAWER.
27 AT JOB SITE, CLEAN GASKET AREA FOR BASE WITH FILE.
28 ASSEMBLE FLOAT ROD, FLOAT AND STAND.
29 INSTALL FLOAT STOPS.
30 INSTALL SCREWS ON FLOAT STOPS.
31 INSTALL FOUR BOLTS TO BASE AND TIGHTEN.
32 TIGHTEN CONDUIT ON ELECTRICAL BOX.
33 TIGHTEN TWO SCREWS AND NUTS AT ELECTRICAL BOX.
34 TIGHTEN SCREW TO FLOAT ROD AT SWITCH.
35 CHECK FLOAT OPERATION WITH PUMP RUNNING.
36 OPEN COVERS TO CHECK VALVES.
37 TEST CHECK VALVE OPERATION.
38 REMOVE OBSTRUCTIONS FROM CHECK VALVES.
39 REPLACE CHECK VALVE COVERS.
40 REPLACE SUMP COVER.
41 REPLACE FOUR NUTS TO SUMP COVER.

NT 087 1 GET TOOLS AND MATERIALS TOGETHER PRIOR TO JOB.
2 REMOVE AND DISASSEMBLE CONDENSATE PUMP; REASSEMBLE AND INSTALL AFTER REPAIR.
3 REMOVE AND INSTALL PACKING AND BALL BEEARINGS IN C ONDENSATE PUMP.
4 REPAIR CONDENSATE PUMP FLOAT AND SWITCH ASSEMBLY.

NT 088
1 GET TOOLS AND EQUIPMENT TOGETHER TO START JOB.
2 GET PORTABLE HOIST IN POSITION.
3 WRAP SLING AROUND PUMP BODY.
4 HOIST BODY AND ALIGN WITH ROLLER BLOCKS.
5 WIRE BRUSH THREADS OF BODY I.D. (12" DIA.) WITH WI RE WHEEL IN AIR MOTOR.
6 WIRE BRUSH THREADS ON BODY O.D. (12" DIA.) WITH WI RE WHEEL IN AIR MOTOR.
7 CLEAN I.D. OF BODY WITH AIR NOZZLE.
8 HAND FILE THREAD AT O.D. OF PIPE.
9 APPLY ANTI-SEIZE COMPOUND TO I.D. OF BODY THREAD.
10 WALK TO DRILL PRESS IN SHOP AND RETURN.
11 DRILL 1/8" CLEARANCE HOLE IN COUPLING.
12 INSTALL COUPLING ON BODY SHAFT.
13 GET CHAINFALL AND ATTACH TO "A" FRAME.
14 POSITION "A" FRAME OVER PIPE AND ATTACH 2 HOOKS.
15 HOIST PIPE 6" AND POSTITION IN FRONT OF BODY.
16 PLACE INNER SHAFT IN PIPE
17 BRUSH ANTI-SEIZE COMPOUND ON INNER SHAFT THREAD.
18 GET WOODEN BLOCKS AND WEDGES TO WORK SITE.
19 BRUSH ANTI-SEIZE COMPOUND ON SPIDER BEARING THREAD
20 SCREW INNER SHAFT INTO COUPLING AND TIGHTEN WITH P IPE WRENCHES. LEFT HAND THREAD.
21 RAISE PIPE TO BODY AND LEVEL WITH TWO HOISTS.
22 BRUSH ANTI-SEIZE COMPOUND ON PIPE THREAD.
23 POSITION PIPE TO BODY AND ENGAGE THREADS.
24 ATTACH PIPE WRENCHES; ONE TO PIPE AND ONE TO BODY; AND TURN TO THREAD TOGETHER.
25 AT INNER SHAFT COUPLING, BRUSH ANTI-SEIZE COMPOUND ON THREADS.
26 PLACE SPIDER BEARING IN INNER SHAFT.
27 HOIST PIPE/BODY ASSEMBLY WITH "A" FRAME.
28 REPOSITION ROLLER BLOCK TO END OF PIPE.
29 MOVE "A" FRAME OUT PAST PIPE END.
30 HOIST HOUSING TO HEIGHT OF ASSEMBLY.
31 ATTACH COUPLING TO INNER SHAFT.
32 BRUSH ANTI-SEIZE COMPOUND ON SHAFT.
33 ATTACH SHORT SHAFT TO COUPLING THROUGH HOUSING AND TIGHTEN.
34 INSTALL SPIDER BEARING IN HOUSING.
35 THREAD HOUSING ONTO PIPE END.
36 TIGHTEN HOUSING TO PIPE WITH STRAP WRENCHES.
37 BLOCK UP SHORT SHAFT.
38 JACK PALLET HOLDING BASE WITH PALLET JACK.
39 MOVE PALLET WITH BASE TO PIPE END.
40 SCREW EYE BOLTS INTO TWO HOLES IN BASE.
41 HOIST BASE.
42 HOIST PIPE/BODY ASSEMBLY.
43 PLACE WOODEN BLOCKS UNDER PIPE/BODY ASSEMBLY.
44 ROLL "A" FRAME WITH BASE FORWARD TO PIPE END OVER SHORT SHAFT.
45 LOWER BASE AND ASIDE PALLET.
46 MOVE "A" FRAME TO ASSEMBLY.
47 LIFT ASSEMBLY WITH "A" FRAME.
48 HOIST BASE AND POSITION TO PIPE END OVER SHORT SHA FT.
49 GREASE SHORT SHAFT WITH HEAVY GREASE BY HAND.
50 SLIDE BASE TO PIPE.
51 REMOVE TWO EYE BOLTS.
52 INSTALL TEN 1" BOLTS AND TIGHTEN.
53 TAP FOUR HOLES BY HAND TO CLEAN UP THREADS.
54 TRY FOUR BOLTS IN TAPPED HOLES.
55 INSTALL AND TIGHTEN LAST FOUR BOLTS.
56 POSITION HOIST TO BODY.

57 LIFT ENTIRE ASSEMBLY WITH HOIST.
58 REMOVE AND ASIDE WOODEN BLOCKS.
59 MATERIAL HANDLING AT JOB SITE.

NT 089
1 POSITION OVERHEAD CRANE TO LIFT PUMP.
2 ATTACH SLING TO PUMP AND REMOVE.
3 LIFT PUMP TO WORK PLATFORM WITH OVERHEAD CRANE.
4 DISCONNECT COMPRESSION COUPLINGS (3" DIA.) ON LUBE LINES; 4 EACH.
5 REMOVE LUBE LINES AND ASIDE.
6 REMOVE 4 MACHINE BOLTS HOLDING PUMP MOTOR MOUNTING PLATE.
7 REMOVE PUMP MOTOR MOUNTING PLATE AND ASIDE.
8 APPLY PENETRATING OIL TO BOLT THREADS. 24 BOLTS.
9 REMOVE PUMP SHAFT NUT AND LOCK RING WITH SPANNER W RENCH.
10 OBTAIN GEAR PULLER AND SET UP ON PUMP SHAFT COUPLI NG.
11 REMOVE PUMP SHAFT COUPLING WITH GEAR PULLER.
12 REMOVE WOODRUFF KEY FROM PUMP SHAFT KEYWAY.
13 REMOVE 4 SMALL BOLTS FROM UPPER SHAFT BEARING HOUS ING.
14 REMOVE UPPER SHAFT BEARING HOUSING.
15 REMOVE 4 LARGE BOLTS FROM MANHOLE MOUNTING PLATE.
16 REMOVE MANHOLE MOUNTING PLATE.
17 REPOSITION HOISTING SLING ON PUMP ASSEMBLY.
18 RAISE PUMP ASSEMBLY WITH OVERHEAD CRANE.
19 CHOCK PUMP ASSEMBLY ON WORK PLATFORM.
20 REMOVE 2 LARGE BOLTS HOLDING DISCHARGE LINE TO IMP ELLER HOUSING.
21 REMOVE DISCHARGE LINE FROM IMPELLER HOUSING.
22 OBTAIN MOBILE CRANE HOIST - 32 PACES ROUND TRIP.
23 REPOSITION HOISTING SLING TO LIFT DISCHARGE LINE O NLY.
24 LIFT DISCHARGE LINE AND MOVE WITH MOBILE CRANE TO POWER HACKSAW.
25 POSITION DISCHARGE LINE TO POWER HACKSAW VISE TO C UT 8 BOLTS.
26 CUT EIGHT 1/2" DIAMETER BOLTS WITH POWER HACKSAW.
27 DRIVE BOLTS OUT OF COLLAR FLANGE WITH HAMMER AND P UNCH.
28 DISCONNECT UPPER AND LOWER DISCHARGE LINE COLLAR F LANGES.
29 REMOVE CHECK VALVE MECHANISM FROM DISCHARGE LINE.
30 CARRY DISASSEMBLED PARTS BACK TO WORK PLATFORM, 36 PACES PER TRIP, 3 TRIPS.
31 REMOVE 8 SMALL BOLTS FROM IMPELLER HOUSING COVER.
32 REMOVE IMPELLER HOUSING COVER.
33 REMOVE IMPELLER LOCKNUT. * DIFFICULT TO REMOVE.
34 OBTAIN GEAR PULLER AND SET UP TO REMOVE PUMP IMPEL LER.
35 REMOVE IMPELLER WITH GEAR PULLER AND ASIDE.
36 REMOVE 4 BOLTS FROM LOWER SHAFT BEARING HOUSING.
37 REMOVE LOWER SHAFT BEARING HOUSING.
38 REMOVE 4 BOLTS FROM MIDDLE SHAFT BEARING HOUSING.
39 REMOVE MIDDLE SHAFT BEARING HOUSING.
40 INSPECT ALL PARTS FOR DAMAGE OR DETERIORATION.
41 ADDITIONAL WALKING IN WORK AREA. *APPROXIMATLY 120 PACES.

NT 090 1 LOOSEN AND RETIGHTEN CAP SCREWS HOLDING MOTOR ADJU
STING PLATE.
2 ADJUST MOTOR AND PLATE TO LOSSEN V-BELTS.
3 ADJUST MOTOR AND PLATE TO TIGHTEN V-BELTS.
4 REMOVE AND REPLACE V-BELTS.
5 CHECK FOR PROPER TENSION OF DRIVE BELT.

NT 091 1 DISCONNECT AND RECONNECT DRYER (ELECTRICALLY).
2 REMOVE AND REPLACE 4 SCREWS FROM BACK PANEL.
3 TILT PANEL TO DISCONNECT WIRE.
4 REMOVE AND CONNECT 3 WIRE LEADS.
5 REMOVE AND INSTALL BACK PANEL.
6 REMOVE AND INSTALL BASKET BELT.
7 LOOSEN AND TIGHTEN PULLEY SET SCREW.
8 REMOVE AND INSTALL PULLEY.
9 REMOVE AND INSTALL 3 BEARING CAP SCREWS.
10 REMOVE AND INSTALL BEARING.
11 CHECK ALIGNMENT OF BASKET.
12 ADJUST BEARING.
13 CHECK OPERATION.
14 CLEAN PULLEY BELT.
15 LUBRICATE BEARINGS.

NT 092 1 DISCONNECT AND RECONNECT DRYER (ELECTRICALLY).
2 REMOVE AND REPLACE 4 SCREWS FROM BACK PANEL.
3 TILT PANEL TO REACH WIRES.
4 REMOVE AND CONNECT 3 WIRE LEADS.
5 REMOVE AND INSTALL BACK PANEL.
6 REMOVE AND REPLACE SERVICE PANEL.
7 REMOVE AND REPLACE BELT.
8 REMOVE AND REPLACE BOLT.
9 REMOVE AND INSTALL WASHER.
10 REMOVE AND INSTALL PULLEY.
11 REMOVE AND INSTALL 4 SCREWS FROM CROSS RAIL.
12 REMOVE AND REPLACE CROSS RAIL.
13 REMOVE AND CONNECT 2 WIRES FROM THERMOSTAT.
14 REMOVE AND REPLACE 3 SCREWS FROM BOTTOM OF HEATER
DUCT.
15 REMOVE AND INSTALL 2 SCREWS FROM CLIP.
16 REMOVE AND INSTALL FRONT TUB AND DUCT ASSEMBLY.
17 REMOVE AND INSTALL BASKET.
18 REMOVE AND INSTALL 2 CLIPS.

NT 093 1 DISCONNECT THE SERVICE CORD.
2 DEPRESS SPRING CLIPS FROM SERVICE PANEL.
3 PULL TOP OF PANEL OUT.
4 LIFT OFF PANEL.
5 UNHOOK DOOR SPRING FROM FRONT PANEL.
6 LIFT UP TOP PANEL.
7 REMOVE RUBBER BOOT FROM DOOR OPENING.
8 REMOVE SHEET METAL SCREWS FROM TOP PANEL.
9 REMOVE SHEET METAL SCREWS FROM BOTTOM PANEL.
10 PULL TOP PANEL IN POSITION.
11 REMOVE WIRES FROM DOOR SWITCH.
12 REMOVE SCREWS FROM WATER LEVEL CONTROL.
13 REMOVE TUBE FROM CONTROL.
14 REMOVE LEVEL CONTROL.
15 REMOVE BACK PANELS.
16 UNCLAMP HOSE CLAMP FROM DRAIN HOSE.
17 REMOVE DRAIN HOSE FROM PUMP.
18 REMOVE WIRES FROM MOTOR TERMINAL, PUMP SOLENOID AN
D HI-SPEED SOLENOID.
19 REMOVE TOP PANEL.
20 REMOVE BELT (HI-SPEED).

21 REMOVE SCREW.
22 REMOVE LOCK WASHER.
23 REMOVE LOCK CUP.
24 REMOVE SHEAVE.
25 REMOVE BELT (LOW SPEED).
26 REMOVE CLUTCH SPRING.
27 REMOVE HUB.
28 REMOVE LOW SPEED SHEAVE.
29 SLIDE IDLER SHEAVE OFF.
30 LAY MACHINE ON BOX.
31 REMOVE BOLTS HOLDING SHOCK ABSORBERS.
32 UNHOOK SUSPENSION SPRINGS.
33 LIFT CABINET OFF UNIT.
34 REMOVE CLAMP RING BOLT.
35 REMOVE CLAMP RING.
36 REMOVE WEIGHT.
37 LIFT OFF FRONT TUB.

NT 094 1 REMOVE AND INSTALL BASKET BEARING, CLEAN, LUBRICAT E, ADJUST AND OPERATE.
2 REMOVE AND REPLACE SCREWS FROM CROSS RAIL.
3 REMOVE AND INSTALL CROSS RAIL.
4 DISCONNECT AND RECONNECT WIRES FROM THERMOSTAT.
5 REMOVE AND REPLACE SCREWS FROM BOTTOM OF HEATER DU CT.
6 REMOVE AND REPLACE SCREWS FROM CLIPS.
7 REMOVE AND INSTALL CLIPS.
8 REMOVE AND INSTALL FRONT TUB AND DUCT ASSEMBLY.
9 REMOVE AND INSTALL BASKET.
10 REMOVE AND REPLACE SCREWS FROM FAN HOUSING.
11 REMOVE AND INSTALL FAN.
12 LOOSEN SET SCREW AND TIGHTEN.
13 REMOVE AND INSTALL PULLEY.
14 REMOVE AND INSTALL VANE.
15 INSPECT WICKS.
16 OIL WICKS.
17 SET PULLEY APPROXIMATELY.
18 FINAL PULLEY ALIGNMENT.

NT 095 1 REMOVE 10 MACHINE SCREWS AND REPLACE.
2 REMOVE AND INSTALL COVER PLATE.
3 REMOVE AND INSTALL 3 NUTS.
4 REMOVE BELT GUARD AND REPLACE.
5 LOOSEN AND TIGHTEN 6 BOLTS.
6 REMOVE BELTS AND REPLACE.
7 REMOVE AND REPLACE HUB CAP.
8 REMOVE AND REPLACE PULLEY AND KEY.
9 REMOVE AND REPLACE 4 NUTS.
10 REMOVE AND REPLACE 8 WASHERS, 4 SPACERS AND 4 BOLT S.
11 REMOVE 2 PILLOW BLOCKS AND REPLACE.
12 CUT HEADS OFF (2) 5/16 - 18 NC X 4" LONG BOLTS AND SLOT WITH HACKSAW.
13 REMOVE AND REPLACE 12 SCREWS.
14 INSTALL AND REMOVE 2 STUDS TWICE.
15 REMOVE AND REPLACE 2 SEAL HOUSINGS 2 GASKETS AND 4 SEALS.
16 APPLY GREASE BOTH SIDES.
17 CLEAN PILLOW BLOCKS AND HOUSING.
18 CHECK FOR LEAKS IN SEALS.

NT 096 1 WIPE ENDS OF RIBBON FEED DRIVE ROLL CLEAN.
2 REMOVE AND INSTALL BIB APRON.
3 REMOVE AND INSTALL TWO NUTS.
4 REOVE AND INSTALL DRAG BAR.
5 CUT OLD RIBBONS AND REMOVE.
6 REMOVE AND INSTALL UPPER RIGHT HAND PANEL SECTION.
7 LOOSEN AND TIGHTEN DRIVE CHAIN.
8 REMOVE AND INSTALL COTTER PINS.
9 REMOVE AND INSTALL STOP LEVER PIN.
10 REMOVE AND INSTALL FINGER GUARD.
11 REMOVE AND INSTALL TWO DOWEL PINS FROM FEED BOARD BRACKETS EACH END.
12 REMOVE AND INSTALL TWO BOLTS FROM FEED BOARD EACH END.
13 REMOVE AND REPOSITION FEED BOARD FROM MACHINE.
14 PLACE AND REMOVE WOOD BLOCK TO MIDPOINT OF FRONT T IE ROD TO SUPPORT RIBBON FEED ROLL.
15 REMOVE AND INSTALL COTTER PIN FROM LEFT HAND RIBBO N FEED DRIVE ROLL BEARING PIVOT PIN.
16 REMOVE AND INSTALL THIS PIVOT PIN.
17 REMOVE AND INSTALL SCREWS FROM BEARING COVER.

18 REMOVE AND INSTALL BEARING COVER.
19 REMOVE AND INSTALL SPLIT RETAINING RING.
20 REMOVE AND INSTALL LEFT BEARING TO RIBBON FEED DRI
VE ROLL SHAFT.
21 REMOVE AND INSTALL FEED BOARD FROM TOP OF DRIVE RO
LL.
22 LOOP FEED RIBBONS OVER DRIVE ROLL AND FEED TABLE.
23 MOVE WOOD BLOCK TO LEFT END OF FRONT TIE ROD.
24 PLACE RIBBONS IN CORRECT POSITION AND ADJUST RIBBO
N TENSION.
25 CLEAN SMALL PARTS.
26 OIL SMALL PARTS.
27 CHECK OPERATION OF IRONER.

NT 097 1 REMOVE AND INSTALL 2 DRIVE V-BELTS.
2 REMOVE AND INSTALL SCREWS FROM CURB TOP.
3 REMOVE AND INSTALL NUTS TO BOLTS SAFETY COVER BRAC KET.
4 REMOVE AND INSTALL BOLTS AND LOCK WASHERS.
5 SWING SAFETY COVER AND BRACKET ASIDE AND REINSTALL AFTER REPAIR.
6 REMOVE AND INSTALL CURB TOP.
7 REMOVE AND INSTALL FELT RING.
8 REMOVE AND INSTALL KEY TO PRESSURE PAD LOCK NUT.
9 REMOVE AND INSTALL PRESSURE LOCK NUT AND PAD WASHE R TO TOE BOX.
10 WEDGE PINCH BAR BETWEEN PULLEY AND TOE BOX AND ROC K BASKET BACK AND FORTH TO FREE PRESSURE PADS.
11 REMOVE AND INSTALL ENTIRE SHAFT-BASKET ASSEMBLY FR OM EXTRACTOR.
12 REMOVE AND INSTALL LOWER PRESSURE PAD FROM TOE BOX
13 CUT OLD UPPER PAD FROM BASKET DRIVE ASSEMBLY.
14 CUT NEW UPPER PAD STRAIGHT THROUGH AND PLACE AROUN D MAIN BEARING SLEEVE.
15 WHEN PROPER TENSION IS REACHED IN REINSTALLING THE PRESSURE NUT, ALIGN ONE OF THE SLOTS IN THE NUT W
16 TURN BASKET BY HAND TO BE SURE IT ROTATES FREELY.
17 CLEAN SMALL PARTS.
18 CHECK OPERATION OF EXTRACTOR AFTER REPAIRS.

NT 098 1 REMOVE AND INSTALL FRONT TUB FROM DOMESTIC WASHER.
2 REMOVE AND INSTALL SOAP RING ON SPINNER SHAFT.
3 LIFT OUT AND REPLACE SPINNER BASKET.
4 PLACE TUB ON WOODEN BOX - REPOSITION.
5 REMOVE AND INSTALL BEARING (CONTROL).
6 TURN TUB-OVER-UPRIGHT.
7 REMOVE AND REPLACE NUT.
8 REMOVE AND INSTALL SHAFT.
9 REMOVE AND INSTALL BEARING (INSIDE).
10 REMOVE AND REPLACE SEAL.
11 CLEAN SHAFT.

NT 099 1 REMOVE AND REINSTALL SAW BLADE AND GUARD.
2 LOOSEN JAM NUTS AND ADJUST JACK NUTS UNTIL WOOD TO P RESTS ON METAL CLEATS.
3 INSERT OR REMOVE STEEL BAR BETWEEN SAW ARBOR COLLA RS.
4 REMOVE OR REINSTALL ARBOR NUT.
5 OSCILLATE SAW CARRIAGE OVER WOOD TOP TO LOCATE HIG H POINT WITH STEEL BAR.
6 ADJUST LOW POINTS TO MATCH HIGH POINT BY ADJUSTING JACK NUTS.

NT 100 1 REMOVE AND REINSTALL 4 CAP SCREWS HOLDING COUPLING COVERS TOGETHER. XXX
2 SLIDE COVERS BACK ON SHAFT AND RETURN AFTER ALIGNMENT.
3 REMOVE AND REINSTALL GRID MEMBER FROM GROOVES.
4 CLEAN COUPLING GREASE FROM COUPLING.
5 PLACE SPACER BLOCK OF PROPER THICKNESS BETWEEN COUPLING HUBS.
6 SET UP FEELER GAUGE.
7 USE FEELER GAUGE TO CHECK SPACING.
8 LOOSEN FOUNDATION BOLTS SO THAT ALIGNMENT MAY BE ADJUSTED AND RETIGHTEN AFTERWARDS.
9 ADJUST REDUCER TO CORRECT ANGULAR AND GAP ALIGNMENT.
10 SET UP GAUGE.
11 USE GAUGE TO CHECK PARALLEL ALIGNMENT.
12 RECHECK ANGULAR ALIGNMENT AFTER TIGHTENING FOUNDATION BOLTS.
13 PACK GREASE INTO COUPLER GROOVES AND ASSEMBLY AFTER REPLACING GRID MEMBERS.
14 GREASE BOTH FITTINGS OF COUPLING AFTER ASSEMBLY WITH GREASE GUN.

NT 101 1 BACK OUT THE SET SCREWS SO THEY DO NOT SUPPORT THE MACHINE.
2 LEVEL THE MACHINE BED WITH AN ORDINARY CARPENTER LEVEL USING 4 OF THE SET SCREWS.
3 PLACE THE SPIRIT LEVEL ACROSS THE BED AT RIGHT- HAND END AND ADJUST LEVEL AT RIGHT ANGLES TO BED.
4 TRANSFER LEVEL TO HEAD END OF BED, SQUARE IT AGAIN AND MAKE CORRECTIONS WITH 2 SET SCREW AND BUBBLE.
5 REPEAT OPERATIONS 3 AND 4.
6 BRING REMAINING 2 SET SCREWS DOWN SOLID FOR FINAL LEVEL.

NT 102 1 PLACE THE STEEL LEVELING PLATES UNDER THE SUPPORT BRACKET LEVELING SCREWS.
2 BRING THE BAR FEED END BRACKET UP TO ITS MATING SURFACE ON THE HEADSTOCK.
3 START THE LOCATING DOWELS SUFFICIENT FOR LOOSE SUPPORT ONLY.
4 BRING UP THE ASSEMBLY BOLTS LOOSELY TO MAINTAIN DOWEL SUPPORT.
5 TIGHTEN THE LEVELING SCREWS UNTIL THE BAR FEED IS ALIGNED BY EYE TO A POSITION SLIGHTLY ON THE LOW S
6 LOOSEN ALL SCREWS HOLDING THE STOCK CARRIER BARS AND STOCK SUPPORT. BRING THEM BACK LOOSELY TO SUPP
7 POSITION THE STOCK FEED CHUCK IN FRONT OF THE CENTER STOCK SUPPORT LEAVING SPACE FOR A CROSS- LEVELI
8 LEVEL AT POSITION 1. LEVEL ACROSS THE STOCK FEED BARS NEXT TO THE HEADSTOCK BRACKET. BRING THE LEV
9 LEVEL AT POSITION 2 AND 3.
10 TIGHTEN THE BOLTS BETWEEN THE BAR FEED END BRACKET AND THE HEADSTOCK.
11 RECHECK LEVEL AT ALL POSITIONS AND CORRECT IF NECESSARY.
12 TIGHTEN CHECK NUTS.
13 LAY THE BAR FEED ON THE FLOOR.

NT 103 1 CHUCK A TEST BAR OF FREE CUTTING COLD ROLLED STEEL APPROXIMATELY TWO INCHES IN DIAMETER AND TWELVE I
2 RUN THE HEADSTOCK AT THE SPEED NEAREST 250 RPM FOR 20 MINUTES THEN RUN AT ITS SECOND HIGHEST SPINDLE
3 SET UP LATHE.
4 AVERAGE HANDLING TIME OF LATHE PER PIECE.
5 TURN APPROXIMATELY 9 INCHES OF LENGTH, MAKE TWO, 3 /8 LANDS - ONE LOCATED AT ONE END AND THE OTHER 8"
6 WITH A HIGH SPEED CUTTING TOOL IN THE SQUARE TURRE T, TAKE A .010" DEPTH TURNING CUT AT A FEED OF .00
7 SET UP GAUGE.
8 GAUGE THE TEST PIECE FOR TAPER.
9 ADJUST THE CARRIAGE BY ADJUSTING THE LEVELING SCRE WS.
10 RECHECK BY TAKING 1 TO 2 SKIM CUTS. * OCC. = 1.5 C UTS X 9" = 13.5
11 REGAUGE TEST PIECE.

NT 104 1 INSERT 8 STEEL FLOOR PLATES FURNISHED WITH THE MAC HINE UNDER THE LEGS AT EACH LEVELING AND LAG SCREW
2 BACK OFF THE LEVELING SCREWS FREE FROM THE LEVELIN G PLATES.
3 TIGHTEN LEVELING SCREWS (4 OUTSIDE CORNERS) TO A F IRM BEARING ON THE LEVELING PLATES.
4 PENCIL A REFERENCE LINE ACROSS THE RAILS FROM A SQ UARE AT 3 POSITIONS FOR LOCATING THE LEVEL.
5 LEVEL AT 1ST POSITION. TIGHTEN LEVELING SCREW 1 O R 2 UNTIL ZERO LEVEL READING IS OBTAINED.
6 LEVEL AT 2ND POSITION. LEVEL UNTIL HALF THE OUT O F LEVEL CONDITION HAS BEEN CORRECTED.
7 LEVEL AT 3RD POSITION AND TAKE A READING.
8 REPEAT LEVELINGS AT 1ST THREE POSITIONS UNTIL THE REQUIRED LEVEL READINGS ARE OBTAINED.
9 LEVEL AT POSITIONS 4 AND 5 (BOTH RAILS).
10 LEVEL AT POSITION 1 AGAIN.
11 LEVEL AT POSITION 2 AGAIN.
12 TIGHTEN ALL CHECK OR LOCK NUTS.
13 SECURE THE MACHINE FIRMLY TO THE FOUNDATION WITH L AG SCREWS WITHOUT DISTURBING THE MACHINE LEVEL.

NT 105 1 RAISE MOTOR TO BASE.
2 MAKE ROUGH CHECK FOR HEIGHT.
3 CHECK FACES OF SHAFTS.
4 PROVIDE SHIMS TO MOTOR.
5 MOUNT INDICATOR ON MOTOR SHAFT.
6 CHECK RADIAL ALIGNMENT.
7 CHECK FACE ALIGNMENT.
8 REMOVE 2 SHIMS.
9 ADD 2 SHIMS.
10 RECHECK WITH INDICATOR.
11 ADD 4 SHIMS.
12 INSTALL 4 NUTS.
13 TIGHTEN 4 NUTS.
14 CHECK RADIAL ALIGNMENT.
15 CHECK FACE ALIGNMENT.
16 LOOSEN 4 NUTS.
17 REMOVE 4 SHIMS.
18 REINSTALL 4 SHIMS.
19 TIGHTEN 4 NUTS.
20 CHECK RADIAL ALIGNMENT.
21 CHECK FACE ALIGNMENT.
22 REMOVE INDICATOR.
23 PULL SPLIT COUPLINGS TOGETHER.
24 ALIGN HOLES.

25 INSTALL 10 NUTS AND BOLTS.
26 TIGHTEN NUTS.
27 FILL COUPLING WITH OIL.
28 DRILL HOLES FOR DOWELS.
29 REAM HOLES.
30 INSTALL DOWELS.
31 MATERIAL HANDLING.

NT 106 1 LEVEL A NEWLY INSTALLED RAM TYPE TURRET LATHE - 6,
000# LATHE 21-1/4" SWING OVER WAYS, 2" MAXIMUM ROU
2 PRECISION ALIGN RAM TYPE TURRET LATHE AFTER PRELIM
INARY ALIGNMENT. ALIGN BY TEST CUTS FROM CARRIAGE

NT 107 1 LEVEL A NEWLY INSTALLED RAM TYPE TURRET LATHE AND
PRECISION ALIGN BY TAKING TEST CUTS FROM CARRIAGE.
2 LEVEL AND ALIGN THE STOCK FEED CHUCK AND THE BAR F
EED - UNIVERSAL RAM TYPE TURRET LATHE (NEWLY INSTA

NT 108 1 PULL THE 2 SHIFTER RODS EXTENDING FROM THE SIDE OF
THE APRON TO THEIR OUTER EXTREMITY.
2 ENGAGE THE FEED SELECTOR AT A FEED OF .005" PER RE
VOLUTION.
3 PLACE THE LOWER SHIFTER SHOE IN THE SLOT OF THE LO
WER SHIFTER ROD.
4 POSITION THE UPPER SHOE ON THE FRONT SIDE OF THE U
PPER SHIFTER ROD.
5 CAREFULLY ROCK THE UPPER SHIFTER SHOE INTO ENGAGEM
ENT WITH THE SLOT OF THE SHIFTER ROD.
6 PULL THE SELECTOR LEVER OUT.
7 PUSH THE FEED SELECTOR AGAINST THE APRON.
8 BRING UP THE ASSEMBLY SCREWS LOOSELY.
9 WITH THE FEED APRON AND FEED ROD ASSEMBLED ON THE
MACHINE, POSITION THE FEED SELECTOR TO CLEAR THE F
10 TIGHTEN THE ASSEMBLY SCREWS.

NT 109 1 REMOVE OR INSTALL ACORN NUT.
2 REMOVE OR INSTALL BALCRANK HANDLE.
3 REMOVE OR INSTALL HEX NUT.
4 REMOVE OR INSTALL MICROMETER DIAL HUB.
5 REMOVE OR INSTALL MICROMETER DIAL SPRING.
6 REMOVE OR INSTALL MICROMETER DIAL.
7 REMOVE OR INSTALL CROSS FEED BUSH.
8 REMOVE OR INSTALL HANDLE KEY AND MICROMETER DIAL K
EY.
9 REMOVE OR INSTALL CROSS FEED HEX NUT.
10 REMOVE OR INSTALL CROSS FEED NUT.
11 REMOVE OR INSTALL CROSS FEED SCREW.

NT 110 1 ENGAGE SPINDLE SPEED SELECTOR AND STOP SPINDLE.
2 REMOVE SOCKET CAP SCREW FROM END OF FEED ROD.
3 REMOVE SOCKET CAP SCREWS FROM COVER.
4 REMOVE COVER.
5 ENGAGE SPEED SELECTOR.
6 TURN THE SPINDLE BY HAND TO ROTATE THE FEED ROD UN
TIL THE KEYWAY IS ON THE BOTTOM.
7 PULL THE FEED ROD OUT OF FEED GEAR TRAIN TO REMOVE
KEY AND COLLAR.
8 REMOVE KEY.
9 REMOVE COLLAR.
10 PULL FEED ROD THROUGH END BRACKET UNTIL IT CLEARS
THE UNIT TO BE REMOVED.

NT 111 1 REMOVE OR INSTALL BELT COVER SCREWS AND HEX NUTS.
2 REMOVE OR INSTALL LOCK SET SCREW AND SET SCREW FRO M MOTOR SHEAVE.
3 REMOVE OR INSTALL MOTOR SHEAVE FROM MOTOR SHAFT.
4 REMOVE OR INSTALL MOTOR SHEAVE KEY FROM MOTOR SHAF T.
5 REMOVE OR INSTALL 4 MOTOR HOLD-DOWN BOLTS.
6 REMOVE OR INSTALL MOTOR FROM LATHE.
7 MATERIAL HANDLING 150#.
8 LOOSEN OR TIGHTEN TENSION ON VEE BELTS.
9 REMOVE OR INSTALL 3 VEE BELTS FROM MOTOR SHEAVE.

NT 112 1 SCREW COMPOUND REST CLEAR OF CARRIAGE SCREW.
2 REMOVE OR INSTALL CARRIAGE-TO-APRON SCREWS.
3 LOOSEN OR TIGHTEN CARRIAGE CLAMP SCREW.
4 REMOVE OR INSTALL PIN HOLE PLUGS AND CARRIAGE PINS .
5 LOOSEN OR TIGHTEN GIB SCREWS.
6 REMOVE OR INSTALL BACK BOX SCREWS.
7 REMOVE OR INSTALL PINS.
8 REMOVE OR INSTALL END NUT.
9 REMOVE OR INSTALL THRUST COLLAR AND BEARING.
10 REMOVE OR INSTALL BACK BOX.
11 SLIDE APRON TO OR FROM FREE END OF LEAD SCREW.
12 REMOVE OR INSTALL APRON - INCLUDES RIGGING.

NT 113 1 REMOVE FEED ROD FROM APRON AND ATTACHMENTS.
2 REMOVE 4 SCREWS TO DETACH THE BRACKET FROM THE END OF THE CROSS SLIDE.
3 TIGHTEN THE CROSS SLIDE BINDER LEVER TO LOCK THE C ROSS SLIDE AGAINST MOVEMENT.
4 TURN THE HANDWHEEL COUNTER CLOCKWISE UNTIL THE BRA CKET IS PULLED FREE FROM ITS DOWELED POSITION ON T
5 RELEASE THE CROSS SLIDE BINDER.
6 LOOSEN CROSS SLIDE TAPER GIB BY REMOVING GIB SCREW .
7 PUSH THE CROSS SLIDE TOWARD THE REAR OF THE MACHIN E UNTIL THE APRON ASSEMBLY SCREWS ARE EXPOSED.
8 PLACE A WOODEN SUPPORT UNDER THE APRON.
9 REMOVE ASSEMBLY SCREWS.
10 LOWER APRON CAREFULLY ONTO WOODEN SUPPORT WITH A W OODEN LEVER.

NT 114 1 REMOVE CARRIAGE FEED APRON - UNIVERSAL RAM TYPE TU RRET LATHE.
2 PLACE A WOODEN SUPPORT UNDER THE SADDLE FEED APRON .
3 REMOVE ASSEMBLY SCREWS.
4 LOWER APRON CAREFULLY ONTO WOODEN SUPPORT WITH A W OODEN LEVER.

NT 115 1 REMOVE OR INSTALL APRON - 24" ENGINE LATHE (LE BLO
ND REGAL TYPE).
2 REMOVE OR INSTALL STRAIGHT PIN.
3 REMOVE OR INSTALL LEAD SCREW.

NT 116 1 INSTALL CLUTCH SHAFT TO HEADSTOCK AS A UNIT.
2 INSTALL BALL BEARING.
3 MOVE SLIDING GEAR TOWARD BACK OF HEADSTOCK.
4 INSTALL BRAKE HOUSING AS A UNIT.
5 INSALL BEARING LOCK WASHER.
6 INSTALL BEARING LOCK NUT.
7 INSTALL 3RD SHIFTER LEVER.
8 INSTALL PIVOT PIN ON SHIFTER LEVER.
9 INSTALL BRAKE-YOKE STUD.
10 INSTALL SET SCREW.
11 INSTALL BRAKE SPRING AND PLUNGER.
12 ADJUST TURRET SLIDE IN PLACE.
13 INSTALL PLUNGER PIN.
14 ENGAGE THE TURRET SLIDE PLUNGER PIN.
15 REMOVE PUSH ROD FROM TURRET FACE.
16 INSTALL COTTER PIN TO BRAKE SPRING PLUNGER.
17 INSTALL THE CLUTCH YOKE.
18 INSTALL COTTER PIN TO CLUTCH LINK.
19 INSTALL BEARING TO CLUTCH.
20 INSTALL BEARING LOCK WASHER TO CLUTCH.
21 INSTALL BEARING LOCK NUT TO CLUTCH.
22 INSTALL GASKET.
23 INSTALL COVER PLATE.
24 INSTALL PIVOT PIN.
25 PLACE DOWEL PINS.
26 INSTALL CAP SCREWS, ETC.
27 INSTALL PLUG.
28 INSTALL GASKET ON REAR COVER.
29 INSTALL GEAR COVER PLATE.
30 INSTALL DOWEL PINS.
31 INSTALL COVER PLATE SCREWS.
32 INSTALL TOP COVER PLATE.
33 INSTALL COVER PLATE SCREWS.
34 INSTALL HEADSTOCK PULLEY AND SHEAVE.
35 INSTALL "V" BELTS.
36 INSTALL RETAINING CAP.
37 INSTALL PIN.
38 INSTALL LOCK WASHER.
39 INSTALL CAP SCREW.
40 INSTALL BELT GUARD.
41 INSTALL SCREWS IN BELT GUARD.
42 INSTALL MOTOR GUARD.
43 INSTALL CAP SCREWS TO MOTOR GUARD.
44 FILL HEADSTOCK WITH LUBRICATING OIL.
45 MATERIAL HANDLING.

NT 117 1 POSITION TAILSTOCK - FOR REMOVAL AND REINSTALLATIO N OF TAILSTOCK SPINDLE SCREW.
2 REMOVE AND REINSTALL ACORN NUT AND HEX NUT.
3 REMOVE AND REINSTALL HANDWHEEL.
4 REMOVE AND REINSTALL END BELL.
5 REMOVE AND REINSTALL THRUST BEARING.
6 LOOSEN AND TIGHTEN CLAMP HANDLE AND CLAMP STUD.
7 REMOVE AND REINSTALL SET SCREW.
8 REMOVE AND REINSTALL KEY AND SPINDLE KEY.
9 REMOVE AND REINSTALL SPINDLE CENTER.
10 REMOVE AND REINSTALL SPINDLE AND TAILSTOCK SPINDLE SCREW.
11 CLEAN SPINDLE AND TAILSTOCK SPINDLE SCREW.
12 CLEAN END BELL AND SPINDLE CENTER.
13 CLEAN THRUST BEARING.
14 LUBRICATE TAILSTOCK SPINDLE SCREW AND SPINDLE.
15 LUBRICATE END BELL AND THRUST BEARING.

NT 118 1 DRAIN THE OIL FROM THE HEADSTOCK.
2 REMOVE CAP SCREW FROM MOTOR PULLEY GUARD.
3 REMOVE MOTOR PULLEY GUARD.
4 REMOVE SCREWS FROM BELT GUARD.
5 REMOVE BELT GUARD.
6 REMOVE HEX CAP SCREW.
7 REMOVE LOCK WASHER.
8 REMOVE PIN.
9 REMOVE RETAINING CAP.
10 REMOVE V-BELTS.
11 REMOVE SHEAVE AND HEADSTOCK PULLEY.
12 REMOVE TOP COVER PLATE SCREWS.
13 REMOVE COVER PLATE.
14 REMOVE REAR COVER PLATE SCREWS.
15 REMOVE DOWEL PINS.
16 REMOVE REAR COVER PLATE AND GASKET.
17 REMOVE HEADLESS PLUG.
18 REMOVE SOCKET CAP SCREWS AND HEAD SCREWS.
19 REMOVE PINS AND DOWEL.
20 REMOVE PIVOT PIN.
21 REMOVE FRONT COVER PLATE AND GASKET.
22 REMOVE BEARING LOCK NUT FROM CLUTCH.
23 REMOVE BEARING LOCK WASHER FROM CLUTCH.
24 REMOVE BEARING FROM CLUTCH.
25 REMOVE COTTER KEY FROM CLUTCH LINK STUD.
26 REMOVE THE CLUTCH YOKE.
27 REMOVE COTTER PIN FROM BRAKE SPRING PLUNGER AND FA CE.
28 INSERT PUSH ROD BETWEEN BRAKE SPRING PLUNGER AND F ACE OF HEXAGON TURRET.
29 ADVANCE THE TURRET SLIDE TO PUSH THE BRAKE-SPRING PLUNGER UNTIL THE PLUNGER IS FREE FOR REMOVAL.
30 REMOVE THE PLUNGER PIN.
31 BACK-OFF THE TURRET SLIDE.
32 REMOVE THE BRAKE-SPRING PLUNGER AND THE BRAKE SPRI NG.
33 REMOVE THE SET SCREW FOR REMOVAL OF THE BRAKE YOKE STUD.
34 REMOVE THE BRAKE YOKE STUD.
35 REMOVE PIVOT PIN FROM 3RD SHIFTER LEVER.
36 REMOVE 3RD SHIFTER LEVEL.
37 REMOVE BEARING LOCK NUT.
38 REMOVE BEARING LOCK WASHER.
39 REMOVE THE BRAKE HOUSING AS AN ASSEMBLED UNIT.
40 MOVE THE SLIDING GEAR TOWARD THE FRONT OF THE HEAD STOCK.

41 REMOVE BALL BEARING.
42 MOVE THE ENTIRE CLUTCH SHAFT TOWARD THE SADDLE END
OF THE MACHINE UNTIL ITS TRAILING END IS FREE FRO

NT 119 1 REMOVE OR INSTALL APRON 24" ENGINE LATHE.
2 REMOVE OR INSTALL HANDWHEEL ACORN NUT.
3 REMOVE OR INSTALL HANDWHEEL WASHER.
4 REMOVE OR INSTALL HANDWHEEL.
5 REMOVE OR INSTALL HEX NUT.
6 REMOVE OR INSTALL FIRST STUD BEARING WASHER.
7 REMOVE OR INSTALL BEARING AND BEARING ACE.
8 REMOVE OR INSTALL FIRST STUD KEY.
9 REMOVE OR INSTALL FIRST STUD.
10 REMOVE OR INSTALL RACKWHEEL BUSHPIN.
11 REMOVE OR INSTALL RACKWHEEL.
12 REMOVE OR INSTALL DETENT SCREW.
13 REMOVE OR INSTALL DETENT SPRING.
14 REMOVE OR INSTALL DETENT.
15 REMOVE OR INSTALL DETENT BALL.
16 REMOVE OR INSTALL BEVEL GEAR BUSH SCREW.
17 REMOVE OR INSTALL BEVEL GEAR BUSH.
18 REMOVE OR INSTALL BEVEL GEAR SHAFT KEY.
19 REMOVE OR INSTALL BEVEL GEAR SHAFT.
20 REMOVE OR INSTALL FEED TRIP STOP SCREW.
21 REMOVE OR INSTALL FEED TRIP OUTER COLLAR PIN AND C
OTTER KEP FROM STOP SCREW.
22 REMOVE OR INSTALL FEED TRIP OUTER COLLAR.
23 REMOVE OR INSTALL FEED TRIP HANDLE.
24 REMOVE OR INSTALL FEED TRIP SPACING COLLAR.
25 REMOVE OR INSTALL INTERMEDIATE GEAR SHIFTER BUSH.
26 REMOVE OR INSTALL LARGE BEVEL PINION PIN.
27 REMOVE OR INSTALL LARGE BEVEL PINION AND BEVEL PIN
ION SLEEVE.
28 REMOVE OR INSTALL BEVEL PINION SHIFTER PIN.
29 REMOVE OR INSTALL BEVEL PINION SHIFTER YOKE.
30 REMOVE OR INSTALL BEVEL PINION SHIFTER ARM.
31 REMOVE OR INSTALL INTERFERENCE ROD.
32 REMOVE OR INSTALL HALF-NUT ADJUSTING SCREW LOCK NU
T AND ADJUSTING SCREW.
33 REMOVE OR INSTALL HALF-NUT CAM PINS.
34 REMOVE OR INSTALL HALF-NUT (2 HALVES).
35 REMOVE OR INSTALL HALF-NUT CAM.
36 REMOVE OR INSTALL SLIDING GEAR SHAFT PIN.
37 REMOVE OR INSTALL SLIDING GEAR SHAFT.
38 REMOVE OR INSTALL RACK PINION PIN.
39 REMOVE OR INSTALL RACK PINION, RACK PINION BEARING
FLANGE, BEARING, BEARING OUTER RACE, AND RACK WHE
40 REMOVE OR INSTALL SMALL BEVEL PINION PIN.
41 REMOVE OR INSTALL SMALL BEVEL PINION SET SCREW.
42 REMOVE OR INSTALL SMALL BEVEL PINION.
43 REMOVE OR INSTALL BEVEL GEAR REAR BUSH PIN.
44 REMOVE OR INSTALL BEVEL GEAR BUSH.
45 REMOVE OR INSTALL BEVEL GEAR.
46 REMOVE OR INSTALL RACK WHEEL COLLAR PIN.
47 REMOVE OR INSTALL RACK WHEEL COLLAR.
48 REMOVE OR INSTALL RACK WHEEL SHAFT BUSH.
49 REMOVE OR INSTALL FEED STOP PIN.
50 REMOVE OR INSTALL SLIDING GEAR PIN.
51 REMOVE OR INSTALL SLIDING GEAR CLUTCH.
52 REMOVE OR INSTALL SLIDING INTERMEDIATE GEAR.
53 REMOVE OR INSTALL CROSS FEED GEAR.
54 REMOVE OR INSTALL BEVEL PINION INDEX HANDLE PIN.
55 REMOVE OR INSTALL BEVEL PINION INDEX HANDLE BARREL
.
56 REMOVE OR INSTALL BEVEL PINION INDEX HANDLE BUSH P
IN.
57 REMOVE OR INSTALL BEVEL PINION INDEX HANDLE, BUSH,
SPRING, PLUNGER AND HANDLE PROPER.

58 REMOVE OR INSTALL HALF-NUT HANDLE PIN.
59 REMOVE OR INSTALL HALF-NUT HANDLE SET SCREW.
60 REMOVE OR INSTALL HALF-NUT HANDLE SPRING.
61 REMOVE OR INSTALL HALF-NUT HANDLE.
62 REMOVE OR INSTALL HALF-NUT STOP SCREW.
63 REMOVE OR INSTALL HALF-NUT STOP SCREW WASHER.

NT 120 1 REMOVE AND REINSTALL LEAD SCREW 24" ENGINE LATHE (LE BLOND REGAL TYPE).
2 CLEAN LEAD SCREW.
3 OIL LEAD SCREW.

NT 121 1 DRAIN OIL FROM HEAD STOCK.
2 REMOVE SCREW.
3 REMOVE WASHER.
4 REMOVE SCREW.
5 REMOVE PLATE.
6 PULL OUT 2 SHAFTS TO DROP INTERMEDIATE GEARS WITHI N THE GEAR CASE FREE FROM OTHER GEARS.
7 INSERT 16 SCREWS IN TAPPED HOLES OF SHAFTS TO FACI LITATE REMOVAL OF SHAFTS.
8 REMOVE 3 SCREWS FROM THE STOP BRACKET.
9 REMOVE THE FEED GEAR CASE. * 8 SCREWS.
10 REMOVE THE FEED GEAR CASE.
11 REMOVE THE HEADSTOCK TOP COVER SCREWS.
12 REMOVE THE TOP COVER.
13 REMOVE SPINDLE FEED GEAR KEY.
14 REMOVE REAR COVER PLATE. * 6 SCREWS.
15 WITHDRAW 5 SPRING LOCKING PINS IN SPINDLE NUT SO T HEY ARE FREE FROM THE HOLE IN THE GEAR FACE. THEN
16 ATTACH NOSE PIECE TO THE SPINDLE.
17 BLOCK SPINDLE NUT FROM ROTATING USING A SOFT STEEL BLOCK BETWEEN A SLOT IN THE NUT AND THE BOTTOM OF
18 TURN NOSE PIECE COUNTER CLOCKWISE USING A LONG BAR TO START THE NUT. A HAMMER BLOW ON THE BAR MAY B
19 REMOVE LABYRINTH SOCK CAP. * 6 SCREWS.
20 REMOVE LABYRINTH FROM HEADSTOCK.
21 REMOVE SPINDLE NOSE PIECE.
22 INSERT 2 SOFT STEEL SPACERS IN HOLES OF SPINDLE FL ANGE.
23 INSERT 2 JACK SCREWS IN HOLES OF SPINDLE FLANGE.
24 ADVANCE JACK SCREWS IN EQUAL AMOUNTS UNTIL A 1/32" FEELER CAN BE INSERTED BETWEEN THE SPLIT RING AND
25 INSERT 1/32" FEELER.
26 REMOVE 2 JACK SCREWS.
27 REMOVE SOFT STEEL SPACERS.
28 ATTACH SPINDLE PULLER TO SPINDLE NOSE. * 4 SCREWS.
29 INSERT SHIMS BETWEEN OUTER SPINDLE PULLER SCREWS A ND THE MACHINED FACE OF THE HEADSTOCK FOR PROTECTI
30 CAREFULLY TIGHTEN OUTER SPINDLE PULLER SCREWS IN E QUAL AMOUNT TO DRAW THE SPINDLE FORWARD WITHOUT CR
31 REMOVE THRUST COLLAR AND THE ADJACENT RACE OF THE BALL THRUST BEARING (TAP THE FACE OF THE THRUST CO
32 INSERT 4 SOFT STEEL PINS OF UNIFORM LENGTH AGAINST THE SIDE OF THE OUTER RACE (ANGULAR CONTACT BALL
33 REMOVE THE OUTER FACE BY CLAMPING AGAINST THE PINS
34 INSERT A SOFT STEEL PIN AGAINST THE SIDE OF THE BA LL THRUST, BEARING THE RACE THROUGH EACH OF THE 4
35 REMOVE THE RACE BY TAPPING EACH PIN LIGHTLY TO PER MIT REMOVAL WITHOUT CRAMPING.
36 INSERT (3) 1/2" - 13" X 5" JACK SCREWS, AGAINST TH E SIDE OF THE OUTER RACE OF THE CYLINDRICAL ROLLER
37 CAREFULLY ADVANCE THE JACK SCREWS IN EQUAL AMOUNTS TO REMOVE THE RACE WITHOUT CRAMPING.
38 REMOVE RACE.
39 MATERIAL HANDLING SUCH AS BOLTS, BLOCKS AND SHIMS.
40 REMOVE 3 THREADED BALL-SPRING RETAINERS WHICH OPER ATE ON THE SHIFTER LEVERS.
41 SCREW OUT PIVOT STUDS FROM TOP OF HEAD STOCK.
42 REMOVE 10 SPEED SELECTOR ASSEMBLY SCREWS FROM HEAD STOCK.

43 REMOVE SPEED SELECTOR ASSEMBLY.
44 WITHDRAW THE SPRING LOCKING PINS (4 IN NUT), FROM THE GEAR TEETH. INSERT WIRES IN ALL LOCKING PINS.
45 BACK OFF NUT.
46 REMOVE SPINDLE FEED GEAR SPINDLE.
47 SET UP SPINDLE.
48 MEASURE SPINDLE.
49 INSPECT SPINDLE.
50 SET UP GEARS, BUSHINGS, BEARINGS, RINGS, AND PLATES.
51 MEASURE GEARS, BUSHINGS, BEARINGS, RINGS, AND PLATES.
52 INSPECT GEARS, BUSHINGS, BEARINGS, RINGS, AND PLATES.
53 SET UP GASKETS, SPACERS, AND PINS.
54 MEASURE GASKETS, SPACERS, AND PINS.
55 INSPECT GASKETS, SPACERS, AND PINS.
56 FILL OUT MATERIAL LIST REQUIRED.

NT 122 1 REMOVE SOCKET CAP SCREW FROM HANDLE ASSEMBLY.
2 REMOVE ELASTIC STOP ADJUSTING NUT.
3 REMOVE THE ADJUSTING NUT WASHER.
4 REMOVE THE CLAMPING LEVER.
5 REMOVE THE SQUARE TURRET ASSEMBLY.
6 REMOVE THE TURRET BASE ASSEMBLY HEX CAP SCREWS.
7 REMOVE THE SQUARE TURRET BASE ASSEMBLY.
8 REMOVE THE TURRET TURNING RATCHET.
9 REMOVE THE THRUST BALL BEARING.
10 REMOVE THE THRUST COLLAR.
11 REMOVE 4 HOLD DOWN PINS 4, THRUST COLLAR PIN AND R ATCHET LATCH PIN.
12 REMOVE 2 SPRINGS.
13 REMOVE DOG POINT AND HALF DOG POINT SET SCREWS.
14 REMOVE STOP COLLAR.
15 REMOVE STOP COLLAR PIN.
16 REMOVE LOCKING PIN BUSHING.
17 REMOVE LOCKING PIN.
18 REMOVE CENTER BUSHING AND PIN.
19 REMOVE CENTER BUSHING KEY.
20 REMOVE SCREWS FROM BASE TONGUE.
21 REMOVE TONGUE.
22 INSTALL GUIDE PIN.
23 INSTALL SPRING.
24 INSTALL TONGUE.
25 INSTALL 2 SCREWS IN TONGUE.
26 PLACE THE LEVER ON THE SPLINED CLAMPING SCREW.
27 TURN THE CLAMPING SCREW COUNTER CLOCKWISE UNTIL TH E LOCKING PIN EXTENDS ABOUT 1/4" ABOVE THE BEARING
28 LOCATE AND LOCK THE COLLAR BY TIGHTENING THE SET S CREW AGAINST THE DRILLED SPOT IN THE CLAMPING SCRE
29 TURN THE CLAMPING SCREW COUNTER CLOCKWISE UNTIL TH E LOCKING PIN IS DEPRESSED AS FAR AS POSSIBLE.
30 ADJUST THE LOCKING PIN SUCH THAT IT IS AT A MINIMU M DISTANCE BELOW THE TOP SURFACE OF THE TURRET BAS
31 INSTALL TURRET BASE ASSEMBLY HEX CAP SCREWS.
32 INSTALL 2 SPRINGS.
33 INSTALL 4 HOLD DOWN PINS, THRUST COLLAR PIN AND RA TCHET LATCH PIN.
34 INSTALL THRUST COLLAR.
35 INSTALL THRUST BALL BEARING.
36 INSTALL TURRET TURNING RATCHET.
37 INSTALL THE SQUARE TURRET ASSEMBLY.
38 REMOVE SPRING.
39 REMOVE GUIDE PIN.
40 REMOVE RATCHET AND CAM.
41 REMOVE SPRING ROLL PIN AND RATCHET PAWL.
42 REMOVE SPLINED CLAMPING SCREW.
43 REMOVE HEX SOCKET PIPE PLUG.
44 CLEAN 32 SMALL, EASY TO CLEAN PARTS.
45 CLEAN 5 MEDIUM, EASY TO CLEAN PARTS.
46 CLEAN 2 LARGE, EASY TO CLEAN PARTS.
47 APPLY GREASE TO CENTER PIN BUSHING, THE BEARING BE TWEEN THE TURRET AND THE BASE AND THE INDEX PIN.
48 INSTALL CENTER BUSHING KEY.
49 INSTALL CENTER BUSHING AND PIN.
50 INSTALL LOCKING PIN.
51 INSTALL LOCKING PIN BUSHING.
52 INSTALL STOP COLLAR PIN.
53 INSTALL STOP COLLAR.
54 INSTALL DOG POINT AND HALF DOG POINT SET SCREWS.
55 INSTALL HEX SOCKET PIPE PLUG.
56 INSTALL SPLINED CLAMPING SCREW.
57 INSTALL SPRING, ROLL PIN AND RATCHET PAWL.

58 INSTALL RATCHET AND CAM.
59 INSTALL THE CLAMPING LEVER.
60 INSTALL THE ADJUSTING NUT WASHER.
61 INSTALL THE ADJUSTING NUT.
62 INSTALL SOCKET CAP SCREW.
63 MOUNT THE SQUARE TURRET ON THE CROSS SLIDE WITH TH E LOCKING PIN TOWARD THE SPINDLE.

NT 123 1 CLEAN INTERIOR OF HEADSTOCK.
2 REMOVE 2 WICKS WHICH CARRY OIL TO THE REAR BALL BE ARING AND TO THE FRONT ROLLER BEARING.
3 CLEAN THE WICKS.
4 REPLACE THE WICKS.
5 CLEAN THE SPINDLE.
6 CLEAN THE THRUST BEARING, SPACER, SPINDLE NUT, 2 S PINDLE GEARS, AND 9 OTHER GEARS, NUTS AND SPACERS.
7 CLEAN 10 SMALL PARTS.
8 LUBRICATE BEARINGS.
9 CHECK ALL PARTS FOR BURRS, ESPECIALLY THE OUTER LA BYRINTH, THE SPLIT RING AND THE MACHINED BEARING S
10 WIPE MICRONIZED GRAPHITE OR MOLYCOTE ON ALL BEARIN G SEATS IN THE HEADSTOCK, ON THE SPINDLE, AND ON T
11 PRESS THE OUTER RACE OF THE ROLLER BEARING TIGHTLY IN PLACE INTO THE HEADSTOCK.
12 DRAW LABYRINTH FIRMLY, BUT WITHOUT DISTORTION, AGA INST THE OUTER ROLLER BEARING RACE.
13 SET UP FEELER GAUGE.
14 USE FEELER GAUGE TO MEASURE THE GASKET THICKNESS.
15 REMOVE LABYRINTH.
16 ATTACH THE GASKET.
17 TAP INTO PLACE, IN THE REAR OF THE HEADSTOCK, THE RACE OF THE THRUST BEARING WHICH HAS THE LARGER IN
18 INSTALL ON SPINDLE WITH CARE THE OUTER LABYRINTH W ITH THE GASKET, THE OIL FLINGER, THE INNER RACE OF
19 INSTALL THE KEY.
20 ARRANGE THE FOLLOWING PARTS INSIDE THE HEADSTOCK, IN THEIR APPROXIMATE ACTUAL POSITION IN THE ASSEMB
21 POSITION THE LARGE SPINDLE GEAR BETWEEN THE FORWAR D HEADSTOCK WALL AND THE PINION GEAR WHICH MESHES
22 INSTALL THE LARGE AND SMALL SPINDLE GEARS, NUT, RE AR THRUST COLLAR, AND THRUST BEARING ON THE SPINDL
23 INSTALL THE SPINDLE IN THE HEADSTOCK.
24 INSTALL ANGULAR CONTACT BEARING ON SPINDLE.
25 MOUNT THE NOSE PIECE, SLEEVE AND INTERNAL DRAWBAR ON SPINDLE.
26 INSTALL 2 NUTS ON SPINDLE DRAWBAR.
27 START THE ASSEMBLY SCREWS LOOSELY IN THE LABYRINTH
28 TIGHTEN 2 NUTS ON SPINDLE DRAWBAR.
29 ADVANCE THE LARGE AND SMALL SPINDLE GEARS BY TAPPI NG WITH A SOFT HAMMER IF NECESSARY.
30 TIGHTEN THE SCREWS IN THE LABYRINTH.
31 CHECK THE REQUIRED GASKET THICKNESS FOR THE REAR C OVER PLATE.
32 MOUNT THE GASKET ON HEADSTOCK.
33 MOUNT REAR COVER PLATE ON HEADSTOCK.
34 INSTALL 6 SCREWS.
35 ASSEMBLE THE REAR KEY ONTO SPINDLE.
36 ASSEMBLE GEAR AND NUT ON SPINDLE.
37 INSTALL THE SPEED SELECTOR ASSEMBLY ON HEADSTOCK.
38 INSTALL THE SPEED SELECTOR ASSEMBLY SCREWS ON HEAD STOCK.
39 INSTALL PIVOT STUDS IN TOP OF HEADSTOCK.
40 INSTALL 3 THREADED BALL-SPRING RETAINERS WHICH OPE RATE ON THE SHIFTER LEVERS.
41 INSTALL THE TOP COVER.
42 INSTALL THE HEADSTOCK TOP COVER SCREWS.
43 INSTALL THE FEED GEAR CASE.
44 INSTALL THE FEED GEAR CASE. * 8 SCREWS.
45 INSTALL 3 SCREWS ON STOP BRACKET.
46 REMOVE 16 SCREWS WHICH WERE PREVIOUSLY INSERTED IN SHAFTS TO FACILITATE SHAFT REMOVAL.
47 INSTALL 2 SHAFTS AND GEAR ASSEMBLIES.

48 INSTALL PLATE.
49 INSTALL SCREW.
50 INSTALL WASHER.
51 INSTALL SCREW.
52 FILL HEADSTOCK WITH OIL.

NT 124 1 REMOVE, DISASSEMBLE, REASSEMBLE AND REINSTALL APRO
N - 24" ENGINE LATHE (LE BLOND REGAL TYPE) 7FT 3"
2 CLEAN APPROXIMATELY 15 SMALL, EASY TO CLEAN PARTS.
3 CLEAN APPROXIMATELY 15 MEDIUM, EASY TO CLEAN PARTS
.
4 CLEAN INTERNAL SURFACE OF APRON.
5 LUBRICATE PARTS.
6 SWAB INTERNAL SURFACE OF APRON WITH OIL.

NT 125 1 LOOSEN SET SCREW ON ADJUSTMENT STRAP.
2 REMOVE METAL STRAP.
3 REMOVE STUD BOLT.
4 REMOVE MOTOR FROM MOUNT.

NT 126 1 REMOVE LEAD NUT AND SCREW FROM SADDLE BRACKET.
2 REMOVE NUT FROM LEAD SCREW.
3 CHECK LEAD NUT.
4 CHECK LEAD SCREW.
5 CHECK THRUST BEARINGS.

NT 127 1 REMOVE SPINDLE AND BEARINGS - UNIVERSAL RAM TYPE T
URRET LATHE.
2 REINSTALL SPINDLE AND BEARINGS, UNIVERSAL RAM TYPE
TURRET LATHE.

NT 128 1 KNOCK OUT DOWEL.
2 REMOVE LEVER AND PUT ASIDE.
3 KNOCK OUT TAPER PIN.
4 REMOVE DOG POINT SCREW.
5 PULL OUT BUSHING.
6 PULL OUT SHAFT.
7 REMOVE PLUG.
8 COLLECT LOOSE PART SPRING, PLUNGER SPACER.
9 REMOVE LINK.
10 REMOVE LEVER DETENT.

NT 129 1 DRAIN OIL FROM MACHINE COLUMN.
2 PUSH UP STARTING LEVER AND LEAVE IN POSITION UNTIL
PULLEY BRACKET IS REINSTALLED.
3 OPEN THE REAR COVER WIDE AND PROP OPEN.
4 REMOVE 5 HEX HEAD SCREWS IN THE PULLEY BRACKET FLA
NGES.
5 REMOVE BRACKET FROM MACHINE AND LAY ASIDE.

NT 130 1 LOOSEN LOCK NUT.
2 BACK OFF DOG POINT SCREW.
3 SLIDE OFF NUT ADJUSTING YOKE.
4 TURN ADJUSTING NUT FOR PROPER CLEARANCE.
5 SLIDE ADJUSTING YOKE BACK AND ENGAGE.
6 CHECK MECHANISM BY HAND CRANK.
7 TIGHTEN DOG POINT SCREW.
8 TIGHTEN LOCK NUT.

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NT  131  1 MOVE MOTOR INTO POSITION ON MOUNT.
         2 INSTALL STUD BOLT THROUGH BASE INTO MOUNT.
         3 INSTALL PULLEY ON MOTOR SHAFT.
         4 TIGHTEN PULLEY SET SCREW.
         5 LOOSEN BOLTS OF MOUNT PIECE.
         6 ADJUST POSITION OF MOTOR WITH SHAFT PULLEY.
         7 INSTALL PULLEY BELT AND REMOVE SLACK.

NT  132  1 LOOSEN LOCK NUT.
         2 REMOVE DOG POINT SCREW.
         3 LOOSEN LOCK NUT.
         4 REMOVE SOCKET SET SCREW.
         5 REMOVE YOKE.
         6 WORK OUT AND REMOVE TABLE SCREW, NUT AND WASHER.
         7 SCREW OUT AND REMOVE TABLE NUT.
         8 WASH AND CLEAN TABLE NUT.
         9 INSPECT NUT VISUALLY.

NT  133  1 CLEAN NUT.
         2 OIL NUT.
         3 CLEAN LEAD SCREW.
         4 OIL LEAD SCREW.
         5 ASSEMBLE NUT TO LEAD SCREW.
         6 INSTALL NUT AND LEAD SCREW INTO SADDLE BRACKET.
         7 WASH OUT AND WIPE BRACKET INTERNAL.
         8 OIL BRACKET INTERNAL.

NT  134  1 REMOVE AND INSTALL SCREW IN BASE OF GEAR BRACKET.
         2 REMOVE AND INSTALL LOCK SPRING UNDER SCREW.
         3 UNSCREW TELESCOPIC TUBE ABOVE AND BELOW THE FEED B
           OX-INSTALL.
         4 REMOVE VERTICAL FEED SHAFT BY PULLING IT UP THROUG
           H THE FEED BOX AND GEAR SHIFTER BRACKET - INSTALL.
         5 REMOVE AND INSTALL 3 HEX HEAD SCREWS FROM FEED BOX
           .
         6 REMOVE AND INSTALL THE FEED BOX UNIT.

NT  135  1 CHECK OPERATION OF TABLE BEFORE REMOVAL.
         2 REMOVE SCREW FROM HAND FEED CRANK.
         3 REMOVE TABLE HAND FEED CRANK.
         4 LOOSEN THUMB SCREW FROM DIAL.
         5 REMOVE DIAL AND ASIDE.
         6 KNOCK OUT TAPER PIN IN CLUTCH COLLAR.
         7 SLIDE OFF CLUTCH SLEEVE.
         8 REMOVE CUP SCREWS.
         9 REMOVE APRON LEFT SIDE.
        10 REMOVE CAP SCREWS.
        11 REMOVE APRON RIGHT SIDE.
        12 REMOVE TABLE GIB AND SET ASIDE.
        13 SLIDE TABLE OFF OF HOUSING.
        14 REMOVE BEARINGS AND SET ASIDE.
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NT 136 1 REMOVE AND INSTALL SCREW IN BASE OF GEAR SHIFTER B
RACKET.
2 REMOVE AND INSTALL LOCK SPRING UNDER SCREW.
3 UNSCREW TELESCOPIC TUBE ABOVE AND BELOW FEED BOX A
ND INSTALL.
4 REMOVE VERTICAL FEED SHAFT BY PULLING IT UP THROUG
H THE FEED BOX AND GEAR SHIFTER BRACKET AND INSTAL
5 REMOVE AND INSTALL 8 FILLISTER HEAD SET SCREWS IN
THE GEAR SHIFTER.
6 REMOVE AND INSTALL THE UNIT.

NT 137 1 REMOVE ALLEN CAP SCREWS.
2 REMOVE SCREW PLUG FROM LIFTING HOLE IN CASTING.
3 SCREW IN SPECIAL LIFTING BOLT.
4 REMOVE ASSEMBLY TO HAND TRUCK.
5 MOVE ASSEMBLY TO WORK TABLE AND PROP IN WORKING PO
SITION.

NT 138 1 LOOSEN SET SCREW ON ARBOR SUPPORT.
2 REMOVE ARBOR SUPPORT AND SHAFT.
3 REMOVE SET SCREWS ON DRIVE SHAFT COLLAR.
4 REMOVE STUDS (3-1/2") FROM CLUSTER PULLEY.
5 REMOVE CLUSTER PULLEY (TAP OFF).
6 REMOVE SPLIT CONE BUSHING FROM DRIVE SHAFT.
7 REMOVE PULLEY DRIVE KEY FROM SHAFT.
8 REMOVE STUDS FROM BEARING HOUSING.
9 LOOSEN (1/8") SET SCREW ON BEARING COLLAR.
10 REMOVE COLLAR FROM ROLLER BEARING.
11 REMOVE ROLLER BEARING.
12 REMOVE DRIVE SHAFT (TAP FROM REAR).
13 PLACE DRIVE SHAFT ON WORK BENCH.
14 INSPECT BEARING RACE, BUSHING AND HOUSING.
15 MEASURE I.D. AND O.D. OF BUSHING.
16 MEASURE TAPER LEVEL OF BEARING RACE.
17 PULL SLEEVE BUSHING AND BEARING RACE FROM HOUSING.
18 REMOVE SNAP RINGS (PIVOT SHAFT).
19 REMOVE CIRCULAR PLATES.
20 REMOVE CAM SHAFT PINS.
21 REMOVE WOODRUFF PINS.
22 REMOVE PIVOT SHAFT.
23 REMOVE MOTOR MOUNT PIECE.

NT 139 1 MOVE MOUNT TO POSITION IN MACHINE.
2 REPLACE PIVOT SHAFT.
3 INSTALL WOODRUFF PINS.
4 INSTALL CAM SHAFT PINS.
5 INSTALL PLATE OVER PIVOT SHAFT ENDS.
6 INSTALL SNAP RINGS.
7 PRESS SLEEVE BUSHING THROUGH 4" MOUNT.
8 INSTALL DRIVE SHAFT.
9 INSTALL ROLLER BEARING OVER SHAFT.
10 PLACE ROLLER BEARING COLLAR.
11 TIGHTEN SET SCREW ON BEARING COLLAR.
12 INSTALL STUD BOLTS IN BEARING HOUSING.
13 INSTALL PULLEY DRIVE KEY IN SHAFT.
14 INSTALL SPLIT CONE BUSHING.
15 INSTALL CLUSTER PULLEY.
16 INSTALL PULLEY STUD BOLTS.
17 INSTALL SHAFT COLLAR SET SCREW.
18 INSTALL ARBOR SUPPORT SHAFT.
19 TIGHTEN SET SCREW.

NT 140 1 UNLOCK AND REMOVE MOTOR DOOR AND SET ASIDE.
2 OPEN PULLEY DOOR AND BLOCK.
3 UNLOCK LOCK NUTS.
4 SCREW DOWN ADJUSTING BOLTS TO RELIEVE TENSION ON D
RIVE BELTS.
5 WORK OFF RUBBER "V" BELTS FROM MOTOR PULLEYS.
6 REMOVE MOTOR HOLD DOWN BOLTS AND LOCK WASHERS.
7 SLIDE MOTOR OUT FROM MOUNT TO DECK OR BLOCKS.
8 HANDLING OF MOTOR TO HAND TRUCK FOR REMOVAL TO SHO
P - 200#.
9 REPLACE MOTOR HOLD DOWN BOLTS AND LOOSE WASHERS.

NT 141 1 WIPE TABLE WAYS.
2 WIPE SADDLE WAYS.
3 OIL TABLE WAYS.
4 OIL SADDLE WAYS.
5 SLIDE TABLE BACK ONTO HOUSING.
6 WIPE TABLE GIB.
7 OIL TABLE GIB.
8 INSTALL TABLE GIB.
9 ADJUST TABLE GIB.
10 CLEAN BEARINGS.
11 OIL BEARINGS.
12 WIPE 2 APRON SURFACES.
13 INSTALL PINS IN APRONS.
14 INSTALL CAP SCREWS.
15 INSTALL BEARINGS IN APRONS.
16 WIPE CLUTCH SLEEVE.
17 OIL CLUTCH SLEEVE.
18 SLIDE CLUTCH SLEEVE ON SPLINE.
19 INSTALL TAPER PIN IN CLUTCH COLLAR.
20 INSTALL COIL SPRING.
21 INSTALL DIAL.
22 INSTALL TABLE HAND FEED CRANK.
23 INSTALL HAND FEED CRANK SCREW.
24 FINAL TABLE GIB ADJUSTMENT.
25 CHECK OPERATION AFTER INSTALLATION.

NT 142 1 REMOVE AND INSTALL SPEED GEAR BOX ASSEMBLY.
2 CHECK OPERATION OF ASSEMBLY AFTER INSTALLING.

NT 143 1 REMOVE SCREWS.
2 REMOVE COVER AND LAY ASIDE.
3 REMOVE NUT.
4 REMOVE WASHER PLATE.
5 UNLOCK STAR LOCK WASHER.
6 REMOVE SPANNER NUT.
7 REMOVE STAR LOCK WASHER.
8 REMOVE CLUTCH, BEARING AND RETAINER.
9 REMOVE ALLEN SOCKET SCREWS.
10 SCREW IN JACKING BOLTS.
11 TIGHTEN JACKING BOLTS.
12 REMOVE APRON AND LAY ASIDE.
13 REMOVE BEARING, PLATE AND RETAINER.
14 REMOVE NUT.
15 SLIDE OFF WASHER, BUSHING, AND HAND WHEEL CLUTCH.
16 RELEASE SNAP RING.
17 REMOVE PIN.
18 SLIDE HAND WHEEL OFF.
19 KNOCK OUT TAPER IN.
20 REMOVE LEVER.
21 REMOVE SCREWS.
22 REMOVE DIAL SPRING RETAINER.
23 REMOVE SET SCREW.

24 SLIDE COLLAR OFF.
25 REMOVE WOODRUFF KEY.
26 REMOVE SCREWS.
27 PRY OFF BRACKET COVER AND REMOVE.
28 PULL HANDWHEEL RELEASE THROUGH AND PUT ASIDE.
29 REMOVE YOKE PIN.
30 REMOVE YOKE.
31 REMOVE SPRING RELEASE ROD.
32 REMOVE SNAP RING.
33 REMOVE PIN.
34 SLIDE OFF AND REMOVE CLUTCH PLATE.
35 REMOVE ALLEN SOCKET SCREWS.
36 PRY OFF TABLE BRACKET AND LAY ASIDE.
37 TAP DOWEL PINS BACK FLUSH.
38 RELEASE GIB ADJUSTING SCREWS AND REMOVE.
39 WORK OUT GIB AND REMOVE.
40 BOLT LIFT EYES TO TABLE.
41 LIFT TABLE OFF MACHINE AND TURN OVER ON "WORK HORS ES".
42 EXTRA HANDLING OF PARTS-100#.

NT 144 1 REMOVE OR INSTALL SCREW IN BOSS OF GEAR SHIFTER BR ACKET.
2 REMOVE OR INSTALL LOCK SPRING UNDER SCREW.
3 UNSCREW TELESCOPIC TUBE ABOVE AND BELOW FEED BOX O R REINSTALL.
4 REMOVE VERTICAL FEED SHAFT BY PULLING IT THROUGH T HE FEED BOX AND GEAR SHIFTER BRACKET OR REINSTALL.
5 UNFASTEN THE PIPE COUPLING DIRECTLY BEHIND THE PUM P INSIDE THE COLUMN OR REFASTEN.
6 REMOVE THE 2 HEX HEAD SCREWS IN PUMP FLANGE OR INS TALL.
7 REMOVE UNIT BY LIFTING STRAIGHT UP OR INSTALL.
8 DISASSEMBLE OR ASSEMBLE CONTRIFUGAL PUMP FOR REPLA CEMENT OF PUMP IMPELLER (REMOVE OR INSTALL 37 SMAL
9 WASH OUT PUMP AND PARTS AFTER DISASSEMBLY.

NT 145 1 REMOVE TABLE.
2 INSTALL TABLE.
3 REMOVE AND DISASSEMBLE LEAD SCREW AND NUT.
4 ASSEMBLE AND INSTALL LEAD SCREW NUT.

NT 146 1 REMOVE TABLE.
2 REMOVE AND DISASSEMBLE LEAD SCREW AND NUT.
3 REMOVE 5/8" HEX HEAD SCREW FROM SADDLE.
4 REMOVE THE HOUSING.
5 CLEAN THE HOUSING.
6 OIL THE HOUSING.
7 INSTALL HOUSING.
8 INSTALL 5/8" HEX HEAD SCREWS IN SADDLE.
9 ASEMBLE AND INSTALL LEAD SCREW AND NUT (INCLUDES C LEANING AND OILING).
10 INSTALL TABLE (INCLUDES OILING).

NT 147 1 REMOVE PULLEY BRACKET OR CHAIN GEAR BRACKET.
2 REMOVE AND INSTALL GEAR SHIFTER BRACKET.
3 REMOVE AND INSTALL COTTER PINS.
4 DRIVE OUT STRAIGHT PIN AND INSTALL.
5 REMOVE AND INSTALL WRENCH BRACKET.
6 DRIVE OUT SHIFTER SHAFT AND INSTALL.
7 WIRE OR PROP SHIFTER OUT OF WAY OF CLUTCH ASSEMBLY AND PLACE BACK IN POSITION.
8 PULL CLUTCH SHAFT ASSEMBLY OUT AND PLACE ON WORK T ABLE AND INSTALL FROM WORK TABLE.
9 DISASSEMBLE AND REASSEMBLE CLUTCH TO REPLACE NEW C LUTCH DISCS.
10 MAKE ADJUSTMENT OF CLUTCH DURING REPAIR.
11 INSTALL PULLEY BRACKET TO MACHINE.
12 REPLACE HEX HEAD SCREWS AND TIGHTEN.
13 REMOVE AND REINSTALL 2 "V" BELTS.
14 LOOSEN AND TIGHTEN 2 BELTS.
15 UNPROP COVER AND CLOSE.
16 ADJUST STARTING LEVER BACK TO NORMAL POSITION.
17 REFILL MACHINE COLUMN WITH LUBRICATING OIL.
18 RUN MACHINE TO CHECK OPERATION.
19 ADJUSTMENT TO CLUTCH.
20 WASH CLUTCH ASSEMBLY PARTS.
21 OIL PARTS.

NT 148 1 REMOVE AND INSTALL GEAR SHIFTER BRACKET AS A UNIT
M TYPE CINCINNATI MILLING MACHINE (UNIVERSAL).
2 REMOVE AND INSTALL THE TAPPED PLUGS BELOW THE SPIN
DLE, ONE IN FRONT AND ONE IN REAR OF COLUMN.
3 DRIVE THE BACK GEAR SHAFT THROUGH THE COLUMN FROM
THE FRONT TO THE REAR AND INSTALL.
4 REMOVE AND INSTALL THE COVER ON THE RIGHT HAND SID
E OF THE COLUMN (REMOVE AND INSTALL 3 SCREWS).
5 LOOSEN AND TIGHTEN GEAR LOCK NUT.
6 REMOVE AND INSTALL 1" PIPE PLUG ON LEFT HAND SIDE
OF COLUMN.
7 LOOSEN AND TIGHTEN SET SCREW ON LOCK NUT.
8 REMOVE AND INSTALL SPINDLE FROM HOUSING.
9 REMOVE AND INSTALL FRONT SPINDLE CAP (4 SCREWS).
10 REMOVE AND INSTALL REAR COVER (4 SCREWS).
11 REMOVE AND INSTALL "L" SHAPED KEY IN SPINDLE.
12 LOOSEN AND TIGHTEN FACE GEAR.
13 LOOSEN AND TIGHTEN SET SCREW IN REAR LOCKNUT.
14 REMOVE AND INSTALL REAR LOCK NUT.
15 DRIVE OUT BEARING RETAINER WITH A SMALL ROD AND RE
INSTALL.
16 TAP THE SPINDLE THROUGH ITS BEARINGS FROM THE REAR
END AND REINSTALL.
17 DISASSEMBLE AND ASSEMBLE SPINDLE (PRESS OFF AND ON
2 INNER RACES).
18 ADJUST FRONT AND REAR BEARINGS FOR FREE RUNNING.
19 CLEAN APPROXIMATELY 35 PARTS.
20 LUBRICATE PARTS WITH OIL.

NT 149 1 PROP OPEN PULLEY DOOR AND CLOSE.
2 REMOVE "V" BELT AND INSTALL.
3 REMOVE NUT AND INSTALL.
4 REMOVE WASHER AND INSTALL.
5 REMOVE ADJUSTMENT NUT AND INSTALL.
6 REMOVE CLUTCH DISC AND INSTALL.
7 USE WHEEL PULLER TO REMOVE SHEAVE.
8 REMOVE PULLEY SLEEVE SET ASIDE AND INSTALL.
9 REMOVE CAP SCREWS AND INSTALL.
10 REMOVE JACKING HOLE PLUGS AND INSTALL.
11 INSTALL AND REMOVE JACKING BOLTS.
12 REMOVE BRACKET ASSEMBLY AND INSTALL.
13 REMOVE BEARING FROM BRACKET AND PULLEY AND INSTALL
14 REMOVE SNAP RING AND INSTALL.
15 REMOVE SPACER RING AND INSTALL.
16 REMOVE GEAR AND INSTALL.
17 CLEAN DIFFICULT PARTS.
18 CLEAN EASY PARTS.
19 ADJUST CLUTCH APPROXIMATE.
20 CHECK OPERATION AFTER REPAIR.
21 FINAL ADJUSTMENT OF CLUTCH.

NT 150 1 REMOVE AND INSTALL HOUSING UNIT.
2 UNSCREW LOCK NUT FROM CROSS SCREW.
3 SCREW OUT CROSS SCREW FROM LEAD NUT AND REMOVE.
4 REMOVE BRACKET SCREWS.
5 REMOVE BRACKET FOR CROSS SCREW.
6 REMOVE SADDLE GIB ADJUSTMENT SCREW.
7 REMOVE SADDLE GIB.
8 SLIDE SADDLE OFF KNEE AND LAY ASIDE.
9 CLEAN SADDLE AND KNEE DOVE-TAILS.
10 OIL SADDLE AND KNEE DOVETAILS.
11 INSTALL SADDLE ON KNEE.
12 CLEAN SADDLE GIB.
13 OIL SADDLE GIB.
14 INSTALL SADDLE GIB.
15 INSTALL GIB ADJUSTMENT SCREW.
16 CLEAN BRACKET FOR CROSS SCREW.
17 OIL BRACKET FOR CROSS SCREW.
18 INSTALL BRACKET FOR CROSS SCREW.
19 INSTALL BRACKET SCREWS.
20 CLEAN CROSS SCREW AND THRUST BEARINGS.
21 OIL CROSS SCREW AND THRUST BEARINGS.
22 INSTALL SCREW AND THRUST BEARINGS.
23 INSTALL LOCK NUT ON CROSS SCREW.
24 ADJUST GIB.
25 CHECK OPERATION AFTER FINAL ASSEMBLY.

NT 151 1 REMOVE AND INSTALL TABLE.
2 TURN OUT LEAD SCREW FROM SADDLE NUT.
3 PLACE LEAD SCREW ON WORK TABLE.
4 WASH LEAD SCREW WITH SOLVENT AND BLOW WITH AIR.
5 SET UP FOR CHECKING LEAD SCREW WITH MICROMETER AND PITCH GAGE.
6 CHECK LEAD SCREW WITH MICROMETER AND PITCH GAGE.
7 OIL LEAD SCREW.
8 WASH AND CLEAN BEARINGS, BUSHINGS, NUTS, ETC.
9 OIL PARTS, BEARINGS, ETC.
10 WASH AND CLEAN WAYS AND DOVETAILS OF TABLE.
11 WASH AND CLEAN TABLE GIB.
12 APPLY OIL TO TABLE WAYS AND DOVETAILS.
13 APPLY OIL TO GIB.

NT 152 1 REMOVE AND INSTALL TABLE. INCLUDES INSPECTION, CHECKING, WASHING, CLEANING AND OILING.
2 REMOVE AND INSTALL LEAD SCREW NUT.
3 ADJUST BACK LASH ON TABLE LEAD SCREW.
4 EXTRA OILING OF MOVING PARTS.

NT 153 1 REMOVE AND INSTALL FEED BOX UNIT.
2 REMOVE AND INSTALL 2 SCREWS ON FEED BOX COVER.
3 REMOVE AND INSTALL FEED BOX COVER.
4 DISASSEMBLE AND ASSEMBLE FEED BOX COMPLETE 66 PARTS.
5 CLEAN FEED BOX PARTS.
6 OIL ASSEMBLED UNIT.
7 CHECK OPERATION DURING REPAIR.

NT 154 1 REMOVE TAPPED PLUGS IN FRONT OF THE COLUMN AND REP
LACE.
2 REMOVE AND INSTALL PULLEY BRACKET. REMOVE AND INS
TALL GEAR SHIFTER. REMOVE AND INSTALL PULLEY SHAF
3 REMOVE AND INSTALL LOCK WASHERS.
4 REMOVE AND INSTALL LOCK NUTS.
5 TAP OUT SHAFTS WITH PIN AND HAMMERS.
6 COLLECT LOOSE PARTS.
7 DISASSEMBLE DRIVE SHAFTS ON WORK TABLE AND ARBOR P
RESS. PRESS OFF 7 BEARINGS.
8 SLIDE OFF BROKEN GEARS FROM DRIVE SHAFTS.
9 SET UP AND MAKE READY TO GAUGE.
10 ASSEMBLE GEARS TO DRIVE SHAFTS.
11 PRESS ON 7 NEW BEARINGS.
12 POSITION AND INSTALL ASSEMBLED DRIVE SHAFTS.

NT 155 1 REMOVE AND INSTALL TABLE, LEAD SCREW AND NUT, AND
ADJUST LEAD SCREW.
2 REMOVE AND INSTALL SPEED GEAR BOX ASSEMBLY, CHECK
OPERATION AFTER INSTALLING.
3 INSPECT AND CHECK GEARS WITH PROFILE GAUGES AND MI
CROMETERS.

NT 156 1 REMOVE AND INSTALL SADDLE AND CROSS FEED SCREW OF
M TYPE CINCINNATI MILLING MACHINE.
2 REMOVE AND INSTALL FEED BOX UNIT.
3 REMOVE AND INSTALL CIRCULAR PLATE ON TOP OF KNEE (
TAP PLATE TO BREAK SHELLAC SEAL AND PRY LOOSE).
4 REMOVE THE LOCK NUT BY HOLDING IT IN POSITION WITH
A FACE SPANNER WRENCH AND TURNING THE HAND CRANK
5 BOLT LIFTING CLAMPS ACROSS THE DOVETAILS OF KNEE F
OR LIFTING WITH CHAIN FALL OR CRANE. TAKE UP SLAC
6 REMOVE AND INSTALL GIB SCREW.
7 REMOVE AND INSTALL GIB ON RIGHT HAND SIDE BETWEEN
THE KNEE AND COLUMN.
8 REMOVE AND INSTALL FOUR HEXHEAD SCREWS WHICH SECUR
E THE KNEE GUIDE.
9 REMOVE AND INSTALL THE GUIDE FORMING THE RIGHT- HA
ND KNEE BEARING TO THE COLUMN.
10 LIFT THE KNEE STRAIGHT UP UNTIL THE BACK OF THE KN
EE CLEARS THE TOP OF THE ELEVATING SCREW. INSTALL
11 ADJUSTMENT OF GIB AND KNEE UNIT.
12 CHECK OPERATION OF KNEE AFTER REPAIR (BY HAND).
13 MAKE FINAL ADJUSTMENTS.

NT 157 1 SHUT OFF POWER TO SAW AT ELECTRICAL DISCONNECT.
2 CLAMP AND UNCLAMP SAW HEAD TO POSITION.
3 MOVE SAW HEAD ON SAW OVERARM TRACK TO END.
4 REMOVE SMALL BOLTS AND NUTS ON LOWER SAW BLADE GUA
RD.
5 REMOVE AND LATER INSTALL LOWER SAW BLADE GUARD.
6 REMOVE BOLTS AND NUTS FROM UPPER SAW BLADE GUARD.
7 REMOVE AND LATER INSTALL UPPER SAW BLADE GUARD.
8 CHOCK BLADE ROTATION WITH WOOD BLOCK.
9 REMOVE REVERSE THREAD ARBOR BOLT AND COLLAR.
10 UNLOCK FRICTION LEVER ON HEIGHT ADJUSTMENT MECHANI
SM.
11 RAISE SAW MOTOR ON TRACK.
12 REMOVE SAW BLADE.
13 WALK TO SAW BLADE RACK AND SELECT NEW BLADE. * 24
PACES ROUND TRIP.
14 REMOVE PROTECTIVE PLASTIC FROM TEETH OF NEW BLADE.
15 CHECK ROTATION OF BLADE.
16 TIGHTEN ARBOR NUT WITH WRENCH.

17 INSTALL WING NUTS TO HOLD TOP AND BOTTOM BLADE GUARDS.
18 UNLOCK SAW HEAD IN OVERARM TRACK.
19 CHECK SAW BLADE FOR TABLE DEPTH AND ADJUST DEPTH OF CUT.
20 LOCK FRICTION LEVER ON HEIGHT ADJUSTMENT MECHANISM .
21 CLEAN UP SAW TABLE AREA.
22 PUT WRENCHES AWAY.
23 RETURN USED BLADE TO SAW BLADE RACK. * 24 PACES.
24 TURN POWER ON, START SAW.
25 PERFORM TEST CUT ON SCRAP.

NT 158 1 TURN AIR SUPPLY OFF AND ON.
2 DISCONNECT AIR LINE.
3 LOOSEN ADAPTER.
4 REMOVE AIR FILTER AND ADAPTER.
5 DISCONNECT ELBOW.
6 REMOVE 2 SCREWS.
7 REMOVE LUBRICATOR AND BRACKET.
8 REMOVE 2 SCREWS.
9 REMOVE BRACKET.
10 MOUNT BRACKET TO LUBRICATOR.
11 MOUNT ASSEMBLY WITH 2 SCREWS.
12 CONNECT ELBOW.
13 CONNECT FILTER AND ADAPTER.
14 CONNECT LUBRICATOR.
15 CONNECT AIR LINE.
16 CHECK CONNECTIONS.

NT 159 1 TURN AIR VALVE ON AND OFF.
2 REMOVE AND INSTALL AIR PRESSURE GAUGE.
3 REMOVE AND INSTALL ELBOW AND NIPPLE ASSEMBLY.
4 REMOVE AND ATTACH ELBOW.
5 DISCONNECT AND CONNECT ELBOW FROM LINE AND TEE.
6 REMOVE AND INSTALL SCREWS.
7 REMOVE AND INSTALL WASHERS.
8 REMOVE AND INSTALL TEE AND ELBOWS.
9 CHECK CONNECTIONS.

NT 160 1 REMOVE SCREWS FROM END PLATE.
2 REMOVE END PLATE FROM ARM.
3 REMOVE STOP SCREW AT FRONT OF ARM.
4 REMOVE CARRIAGE AND MOTOR ASSEMBLY AS A COMPLETE U
NIT.
5 LOOSEN SET SCREWS HOLDING ROLLER ASSEMBLIES TO CAR
RIAGE.
6 REMOVE ROLLERS FROM CARRIAGE.
7 CLEAN ROLLERS.
8 INSPECT ROLLERS FOR WEAR AND CONDITION.
9 CLEAN ROLLER TRACKS AND CARRIAGE.

NT 161 1 REMOVE SCREW FROM CUTTER BLOCK.
2 REMOVE CUTTER BLOCK.
3 RELEASE CUTTER PLUNGER.
4 REMOVE CUTTER PLUNGER.
5 LOOSEN CUTTER SCREWS.
6 BACK OUT STATIONARY CUTTER.
7 FIT MOVABLE CUTTER INTO CORRECT POSITION.
8 SLIDE PLUNGER AND CUTTER INTO CORRECT ALIGNMENT.
9 TIGHTEN HOLDING SCREW INTO CORRECT ALIGNMENT.
10 SLIDE STATIONARY CUTTER INTO BODY.
11 ADJUST CUTTING SURFACES.
12 TIGHTEN CUTTER HOLDING SCREWS.
13 REINSTALL CUTTER BLOCK.
14 ADJUST FOR CORRECT POSITION.
15 REINSTALL SCREW.
16 TURN OVER MACHINE BY HAND FOR CORRECT OPERATION.
17 RESET CUTTER STROKE.
18 CHECK OPERATION BY HAND AFTER ADJUSTMENT.

NT 162 1 ADJUST BLADE HEIGHT.
2 CLOSE AND OPEN SHUT-OFF COCK.
3 REMOVE AND INSTALL COVER HINGE PIN.
4 REMOVE AND INSTALL COVER.
5 DISCONNECT AND CONNECT OIL INTAKE AND EXHAUST LINE S.
6 REMOVE AND INSTALL SET SCREWS.
7 REMOVE AND INSTALL TAPER PIN.
8 REMOVE AND INSTALL COLLAR.
9 REMOVE AND INSTALL CONNECTING ROD.
10 REMOVE AND INSTALL CAP SCREWS.
11 REMOVE FEED UNIT ASSEMBLY AND INSTALL NEW UNIT.
12 REMOVE SET SCREW (NEW UNIT).
13 REMOVE TAPER PIN (NEW UNIT).
14 REMOVE COLLAR (NEW UNIT).
15 REMOVE CONNECTING ROD (NEW UNIT).
16 REMOVE AND INSTALL CROSS HEAD.
17 REMOVE AND INSTALL METERING PLUNGER.
18 BLEED OIL INTO FEED UNIT.
19 CHECK CALIBRATION OF FEED UNIT.
20 ADJUST FEED UNIT.
21 CHECK OPERATION.
22 OPEN INTAKE VALVE.
23 ADJUST VARIABLE FEED INDICATOR.

NT 163 1 LOOSEN AND TIGHTEN NUT.
2 DISASSEMBLE AND ASSEMBLE STEM AND NUT.
3 REMOVE AND INSTALL BONNET SCREWS.
4 REMOVE AND INSTALL RETAINERS, SPRINGS, DIAPHRAGM, GASKETS AND PLATE.
5 REMOVE AND INSTALL SEAT.
6 REMOVE AND INSTALL SPRING AND PIN.
7 REMOVE AND INSTALL PLUGS.
8 REMOVE AND INSTALL GASKET, SPRING SCREEN AND VALVE .
9 CLEAN PARTS.
10 INSPECT PARTS.
11 SEAT BONNET AND ALIGN.

NT 164 1 INSTALL ROLLER ASSEMBLIES TO CARRIAGE.
2 TIGHTEN SET SCREWS.
3 INSTALL CARRIAGE AND MOTOR UNIT.
4 INSTALL STOP SCREW TO ARM.
5 PLACE LIGHT IN BACK OF CARRIAGE ON TRACK.
6 BACK OFF NUTS AT EITHER END OF CARRIAGE.
7 LOOSEN SMALLER SET SCREW THAT LOCKS LARGER SET SCR EW.
8 ADJUST LARGER SET SCREWS UNTIL LOWER ROLLERS ARE F LAT ON TRACKS.
9 ADJUST SAME SET SCREWS FOR END BLOCK HEIGHT.
10 CHECK OPERATION OF SAW CARRIAGE.
11 TIGHTEN JAM NUTS ON STUDS.
12 INSTALL PLATE AT END OF ARM.
13 INSTALL SCREWS TO PLATE.

NT 165 1 UNSCREW FILTER PLUG AND REPLACE.
2 REMOVE GASKETS AND SCREEN AND REASSEMBLE.
3 UNSCREW 6 BOLTS AND REASSEMBLE.
4 SEPARATE HOUSING GASKETS, BOWL AND RING.
5 CLEAN PARTS.
6 INSPECT PARTS.
7 SEAT GASKET AND BOWL ON RING.
8 PLACE GASKET AND HOUSING.
9 REMOVE PLUG FROM LUBRICATOR AND REPLACE.
10 LOOSEN NUT AND TIGHTEN.
11 REMOVE NEEDLE AND REPLACE.
12 UNSCREW PLUG AND REPLACE.
13 REMOVE GASKET AND PLATE AND REPLACE.
14 REMOVE GLAND AND REPLACE.
15 REMOVE GASKETS AND GLASS AND REPLACE.
16 REMOVE VENTURI TUBE AND BUSHING AND REPLACE.
17 REMOVE 6 SCREWS AND REPLACE.
18 SEPARATE HEAD, GASKETS, BOWL AND RING AND REASSEMB
LE.
19 REMOVE SEAT AND REASSEMBLE.
20 REMOVE SPRING AND BALL AND REPLACE.
21 INSPECT PARTS.
22 CLEAN PARTS.
23 INSTALL PACKING.

NT 166 1 REMOVE 4 SCREWS - SOCKET HEAD CAP.
2 REMOVE OIL HOLE COVER.
3 REMOVE SPINDLE COVER.
4 REMOVE STANDARD BEARING LOCK NUT.
5 REMOVE STANDARD BEARING LOCK WASHER.
6 REMOVE BALL BEARING.
7 REMOVE 4 SCREWS FROM SPINDLE BEVEL GEAR HOUSING.
8 REMOVE SPINDLE BEVEL GEAR HOUSING.
9 REMOVE BEVEL GEAR HOUSING SHIM.
10 REMOVE BEARING SPACER.
11 REMOVE BALL BEARING.
12 REMOVE SPIRAL BEVEL GEAR HUB SCREWS.
13 REMOVE SPIRAL BEVEL GEAR HUB.
14 REMOVE SPIRAL BEVEL GEAR.
15 REMOVE SOCKET HEAD CUP POINT SET SCREW.
16 REMOVE SPINDLE LOCK NUT.
17 REMOVE SPINDLE WASHER.
18 REMOVE CUP AND CONE, ROLLER BEARINGS.
19 REMOVE UPPER CLOSURE.
20 REMOVE LOWER CLOSURE.
21 REMOVE SPINDLE AND QUILL.
22 CLEAN 12 SMALL PARTS (EASY TO CLEAN).
23 CLEAN 7 MEDIUM PARTS (EASY TO CLEAN).
24 LUBRICATE 12 SMALL PARTS.
25 LUBRICATE 7 MEDIUM PARTS.

NT 167 1 REMOVE AND INSTALL BOLTS FROM FLYWHEEL GUARD.
2 REMOVE AND INSTALL GUARD.
3 ROTATE FLYWHEEL INTO POSITION BY HAND.
4 REMOVE SCREWS FROM RETAINER RINGS.
5 REMOVE RETAINER RINGS.
6 REMOVE DISC SEGMENTS.
7 INSTALL NEW SEGMENTS.
8 INSTALL RETAINER RINGS.
9 INSTALL RETAINER SCREWS.
10 CLEAN CLUTCH DISC.
11 CHECK OPERATION OF CLUTCH BY HAND.
12 CHECK OPERATION WITH POWER.

NT 168 1 LOWER MAIN HOUSING.
2 OPEN AIR BLEEDER COCKS.
3 DRAIN OIL FROM CYLINDERS.
4 REMOVE CYLINDER TO HOUSING SCREWS.
5 REMOVE FLANGE TO CYLINDER SCREWS.
6 REMOVE FLANGES AND GASKETS.
7 BLOCK UP CYLINDERS.
8 REPLACE PACKING IN RECESSES.
9 INSTALL SHIMS ON COLUMNS.
10 REMOVE BLOCKING AND SLIDE CYLINDERS DOWN COLUMN.
11 ASSEMBLE CYLINDER TO HOUSING SCREWS.
12 INSTALL FLANGE AND GASKETS.
13 ASSEMBLE FLANGE TO CYLINDER SCREWS.
14 CLOSE AIR BLEEDER COCKS.
15 FILL CYLINDERS WITH OIL.
16 LOOSEN AIR BLEEDER COCKS.
17 ADJUST AMOUNT OF OIL IN CYLINDERS.
18 TIGHTEN AIR BLEEDER COCKS.
19 CHECK VERTICAL TRAVERSE.
20 ADD OIL IN RESERVOIR.
21 CHECK CALIBRATION OF FEED UNIT.
22 ADJUST FEED UNIT.
23 CHECK OPERATION.

NT 169 1 OPEN AND CLOSE HINGED COVER.
2 REMOVE AND INSTALL BOLTS FOR SUPPORT PLATE.
3 REMOVE AND INSTALL SUPPORTING PLATE.
4 REMOVE AND INSTALL THUMB NUTS.
5 REMOVE AND INSTALL COVER.
6 LOOSEN AND TIGHTEN CAP SCREWS.
7 ADJUST BOLT TO RELEASE TENSION ON "V" BELT.
8 REMOVE AND INSTALL "V" BELT.
9 REMOVE AND INSTALL PULLEY CAPS.
10 REMOVE AND INSTALL NUTS FROM PULLEYS.
11 REMOVE AND INSTALL LOCK WASHERS.
12 REMOVE AND INSTALL PULLEYS.
13 REMOVE AND INSTALL BOLTS.
14 REMOVE AND INSTALL GUARD PLATE.
15 REMOVE AND INSTALL LOCKNUTS.
16 REMOVE AND INSTALL SPRING.
17 REMOVE AND INSTALL CAP SCREWS.
18 REMOVE AND INSTALL HOPPER.
19 REMOVE AND INSTALL SUPPORT BOLTS.
20 REMOVE AND INSTALL SHAFT BOX.
21 REMOVE AND INSTALL COMBING BELT.
22 ADJUST "V" BELT TO PROPER TENSION.
23 ADJUST COMBING BELT FOR PROPER RIDING.
24 LOOSEN NUT ON FINGERS.
25 ADJUST FINGERS FOR PROPER CLEARANCE.
26 TIGHTEN NUTS.
27 CHECK OPERATION OF SWEEP FINGERS.

NT 170 1 REMOVE AND DISASSEMBLE SPINDLE AND QUILL OF RADIAL DRILLING MACHINE, 3FT AND 7" COLUMN. CLEAN AND L
2 INSTALL SPINDLE AND QUILL.
3 INSTALL UPPER AND LOWER CLOSURE.
4 INSTALL CUP AND CONE, ROLLER BEARINGS AND SPINDLE WASHER.
5 INSTALL SPINDLE LOCK NUT.
6 INSTALL SOCKET HEAD CUP POINT SET SCREW.
7 INSTALL SPIRAL BEVEL GEAR AND SPIRAL BEVEL GEAR HU B.
8 INSTALL SPIRAL BEVEL GEAR HUB SCREWS.
9 INSTALL BALL BEARING AND BEARING SPACER.
10 INSTALL BEVEL GEAR HOUSING SHIM.
11 INSTALL SPINDLE BEVEL GEAR HOUSING.
12 INSTALL 4 SCREWS IN SPINDLE BEVEL GEAR HOUSING.
13 INSTALL BALL BEARING.
14 INSTALL STANDARD BEARING LOCK WASHER.
15 INSTALL STANDARD BEARING LOCK NUT.
16 INSTALL SPINDLE COVER AND OIL HOLE COVER.
17 INSTALL 4 SCREWS - SOCKET HEAD CAP.

NT 171 1 CLAMP THE COLUMN BY USE OF HAND COLUMN CLAMPING LE VER AND UNCLAMP.
2 RAISE AND LOWER THE ARM UNTIL IT IS 12" ABOVE ITS LOWEST POSITION.
3 REMOVE AND INSTALL 2 SCREWS.
4 REMOVE AND INSTALL COVER PLATE.
5 MOVE THE SPINDLE DOWN TO ITS LOWEST POSITION.
6 REMOVE AND INSTALL WASHER.
7 TIGHTEN AND LOOSEN CAP SCREW.
8 RAISE AND LOWER SPINDLE UNTIL SAFETY CATCH ENGAGES THE GUIDE BAR.
9 PLACE AND REMOVE BLOCKING ON BASE UNDER SPINDLE.
10 OPEN SWINGING COVER AND CLOSE.
11 REMOVE AND INSTALL COUNTER BALANCE CHAIN SCREW.
12 DEPRESS SAFETY CATCH.
13 LOWER AND RAISE SPINDLE.
14 BLOCK AND UNBLOCK TIGHTLY UNDER SPINDLE.
15 REMOVE AND INSTALL 2 JAM NUT LOCK SCREWS.
16 REMOVE AND INSTALL JAM NUT.
17 UNSCREW AND SCREW RETAINING PLUG.
18 REMOVE AND INSTALL SAFETY PLATE.
19 DRAIN CRANKCASE OF OIL.
20 FILL CRANKCASE WITH OIL.
21 REMOVE AND INSTALL 8 SCREWS.
22 REMOVE AND INSTALL FRONT FEED COVER.
23 REMOVE AND INSTALL SPOOL PIN.
24 REMOVE AND INSTALL SET SCREW IN COLLAR.
25 REMOVE AND INSTALL POINTER.
26 REMOVE LEVER AND SHAFTS AND INSTALL.
27 REMOVE AND INSTALL BACK GEAR LEVER.
28 REMOVE AND INSTALL BACK GEAR SHAFT.
29 REMOVE AND INSTALL SCREWS.
30 REMOVE AND INSTALL COVER PLATE.
31 REMOVE GASKET AND REPLACE.
32 REMOVE AND INSTALL SCREWS.
33 REMOVE AND INSTALL TAPER PINS.
34 REMOVE COVER AND QUICK RETURN UNIT AS A COMPONENT.
35 INSTALL QUICK RETURN UNIT AND COVER AS COMPONENT.
36 ADJUST AND ENGAGE COMPONENT.
37 PLACE A BAR THROUGH TANG SLOT.
38 ELEVATE ARM UNTIL IT CLEARS SPINDLE.
39 REMOVE SPINDLE AND REINSTALL.
40 REMOVE BAR.

NT 172 1 REMOVE AND INSTALL SCREWS TO HANDHOLE COVERS.
2 REMOVE AND INSTALL COVERS.
3 REMOVE AND INSTALL BRUSHES.
4 REMOVE AND INSTALL CAP SCREWS HOLDNG END SHIELD.
5 REMOVE AND INSTALL END SHIELD.
6 REMOVE AND INSTALL SCREWS FROM MOTOR END COVER.
7 REMOVE AND INSTALL RETAINING BOLT.
8 REMOVE AND INSTALL WASHER.
9 REMOVE AND INSTALL ROTOR.
10 REMOVE AND INSTALL SCREWS FOR CONTROL BOX.
11 REMOVE AND INSTALL CONTROL BOX.
12 REMOVE AND INSTALL NUTS FOR STATOR FRAME.
13 REMOVE MOTOR FRAME AND STATOR ASSEMBLY.
14 REMOVE AND INSTALL ARMATURE.
15 REMOVE AND INSTALL FAN AND SEAL.
16 REMOVE AND INSTALL BEARINGS.
17 LUBRICATE BEARINGS.
18 CHECK OPERATION.

NT 173 1 DRAIN OIL FROM CLUTCH CASE.
2 REMOVE AND INSTALL CAP SCREWS.
3 REMOVE AND INSTALL COVER OF CLUTCH HOUSING.
4 REMOVE AND INSTALL TOP COVER.
5 DISCONNECT AND CONNECT OIL PIPE LINE UNION.
6 REMOVE AND INSTALL PIPE LINE.
7 REMOVE AND INSTALL SCREW.
8 REMOVE AND INSTALL HOUSING SCREWS.
9 REMOVE AND INSTALL CAP SCREWS TO END PLATE.
10 REMOVE AND INSTALL LOWER HALF OF CLUTCH CASE.
11 REMOVE AND INSTALL TAPER PINS FOR BRACKET SUPPORTI NG SHAFT.
12 REMOVE AND INSTALL BRACKET CAP SCREWS.
13 REMOVE AND INSTALL SHAFT FROM AND TO HOUSING. * OC C. = .1024 X 3 MEN X 2 TIMES.
14 REMOVE AND INSTALL CLUTCH ASSEMBLY.
15 WASH CLUTCH ASSEMBLY.
16 CLEAN SHAFT.
17 CLEAN MEDIUM PARTS.
18 ADJUST CLUTCH.
19 REFILL CLUTCH CASE WITH OIL.

NT 174 1 REMOVE AND INSTALL GUARD BOLT.
2 REMOVE AND INSTALL BELT GUARD.
3 REMOVE AND INSTALL UNION.
4 LOOSEN AND TIGHTEN LOCK NUTS ON MOTOR JACK SCREWS.
5 LOOSEN AND TIGHTEN MOTOR JACK SCREWS TO ADJUST BEL T.
6 REMOVE AND INSTALL "V" BELT.
7 ADJUST FOR CORRECT BELT TENSION.
8 REMOVE AND INSTALL BOLTS HOLDING FUEL TUBE BRACKET TO CHASSIS.
9 REMOVE AND INSTALL FUEL TUBE BRACKET.
10 CENTER FUEL TUBE BY ADJUSTING SCREWS.
11 DRAIN OIL FROM BURNER CHASSIS.
12 DISASSEMBLE AND ASSEMBLE PIPE UNIONS.
13 DISCONNECT AND CONNECT TWIST-LOCK PLUGS.
14 REMOVE AND INSTALL NUTS FROM HINGE STUDS.
15 REMOVE AND INSTALL ROTARY BURNER.
16 LOOSEN AND TIGHTEN SHEAVE SET SCREW.
17 REMOVE AND INSTALL SHEAVE.
18 REMOVE AND INSTALL SHEAVE KEY.
19 REMOVE AND INSTALL BOLTS OF FRONT FAN HOUSING.
20 REMOVE AND INSTALL FAN HOUSING ASSEMBLY.
21 LOOSEN AND TIGHTEN FAN SET SCREWS.

22 REMOVE AND INSTALL FAN KEY.
23 REMOVE AND INSTALL FAN TO BURNER SHAFT.
24 REMOVE AND INSTALL SCREWS TO REAR FAN HOUSING.
25 REMOVE AND INSTALL REAR FAN HOUSING AND HINGE ASSE MBLY.
26 REMOVE AND INSTALL CAP SCREWS, FRONT AND REAR BEAR ING COVER.
27 REMOVE AND INSTALL FRONT AND REAR BEARING COVERS.
28 REMOVE AND INSTALL GASKETS TO COVERS.
29 DISASSEMBLE AND ASSEMBLE BURNER SHAFT THROUGH REAR BEARING.
30 REMOVE AND INSTALL REAR BEARING.
31 REMOVE AND INSTALL FRONT BEARING.
32 CLEAN SMALL PARTS.
33 CLEAN MEDIUM PARTS.
34 INSPECT PARTS.
35 OIL SMALL PARTS.
36 OIL MEDIUM PARTS.
37 FILL BURNER CHASSIS WITH OIL.
38 CHECK OPERATION OF BURNER SHAFT, BEARING AND FAN A FTER ASSEMBLY.

NT 175 1 REMOVE AND INSTALL BOLTS FOR GUARD.
2 REMOVE AND INSTALL GUARD.
3 ROTATE FLYWHEEL INTO POSITION BY HAND.
4 REMOVE SCREWS FROM RETAINING RINGS.
5 REMOVE RETAINING RINGS.
6 REMOVE DISC SEGMENTS.
7 INSTALL NEW DISC SEGMENTS.
8 INSTALL RETAINER RINGS.
9 INSTALL RETAINING RING SCREWS.
10 CLEAN CLUTCH.
11 CHECK OPERATION OF CLUTCH BY HAND.
12 CHECK OPERATION WITH POWER.

NT 176 1 ASSEMBLE CLUTCH, SPRING AND SLEEVE.
2 INSTALL PIN TO HOLD ASSEMBLY.
3 CHECK TIMING BY SETTING ARROW ON THE CLUTCH SLEEVE TO OLD CLUTCH NUMBER.
4 INSTALL CLUTCH ASSEMBLY ON SHAFT.
5 INSERT KEY IN KEYWAY AND SEAT.
6 DRIVE SLEEVE ONTO TAPER.
7 CHECK DIMENSION WITH COMBINATION SQUARE.
8 INSTALL RETAINING NUT.
9 INSTALL SET SCREW.
10 REMOVE PIN FROM CLUTCH FACE.
11 INSTALL SMALL END COVER.
12 INSTALL SOCKET BOLTS.
13 FILL DRIVE BOX WITH OIL.

NT 177 1 REMOVE 22 SOCKET BOLTS FROM KNIFE GUARD.
2 REMOVE KNIFE GUARDS FROM HOLDDOWN BEAM.
3 INSTALL KNIFE GUARDS.
4 INSTALL 22 SOCKET BOLTS.

NT 178 1 DRAIN OIL FROM DRIVE BOX.
2 REMOVE SOCKET BOLTS.
3 REMOVE SMALL END COVER.
4 CLEAN FACE OF CLUTCH.
5 MAKE A NOTE OF NUMBER AT ARROW ON CLUTCH.
6 REMOVE SET SCREW HOLDING RETAINING NUT.
7 REMOVE NUT FROM ECCENTRIC SHAFT.
8 TAKE DISTANCE FROM END OF SHAFT TO FACE OF SLEEVE WITH COMBINATION SQUARE.
9 INSERT PIN IN CLUTCH FACE TO KEEP SLEEVE FROM FLYI NG OUT.
10 PLACE PULLING CROSS BAR.
11 INSTALL PULLING STUDS AND NUTS AND REMOVE.
12 REMOVE CLUTCH ASSEMBLY.
13 DISASSEMBLE CLUTCH AND SLEEVE.
14 CLEAN PARTS.
15 INSPECT PARTS.

NT 179 1 PRESS NEW SPIDER IN WORM WHEEL.
2 REAM HOLES IN NEW SPIDER TO A DRIVE FIT FOR CAP SC
REWS.
3 INSTALL CAP SCREWS.
4 INSTALL NUTS.
5 INSTALL COTTER PINS.
6 INSTALL RACE ON WHICH SPIDER TURNS.
7 INSTALL WORM WHEEL AND SPIDER ASSEMBLY.
8 INSTALL COVER CARRING CLUTCH PIN.
9 INSTALL BOLTS IN COVER.

NT 180 1 REMOVE CLUTCH FROM POWER SHEARS.
2 REMOVE BOLTS FROM COVER.
3 REMOVE COVER CARRING CLUTCH PIN.
4 REMOVE RACE ON WHICH SPIDER TURNS.
5 REMOVE WORMWHEEL AND SPIDER ASSEMBLY.
6 REMOVE COTTER PINS.
7 REMOVE NUTS.
8 REMOVE CAP SCREWS.
9 PRESS OUT OLD SPIDER.

NT 181 1 REASSEMBLE AND INSTALL SPIDER IN POWER SHEARS.
2 INSTALL CLUTCH IN POWER SHEAR AND FILL DRIVE BOX W
ITH OIL.

NT 182 1 LOOSEN NUTS HOLDING TABLE TO BED.
2 MOVE TABLE BACKWARDS WITH ADJUSTING SCREWS.
3 REMOVE BOLTS HOLDING FLYWHEEL GUARD.
4 REMOVE FLYWHEEL GUARD.
5 OPEN HOLDDOWN BLEED VALVE AND CLOSE.
6 ENGAGE CLUTCH AND MOVE RAM DOWN BY ROTATING FLYWHE
EL BY HAND UNTIL KNIVES CROSS BEHIND FIRST HOLDDOW
7 MOVE TABLE FORWARD UNTIL FEELER WILL JUST GO BETWE
EN KNIVES WHERE THEY CROSS AT FIRST HOLDOWN POINT.
8 MOVE RAM DOWN UNTIL KNIVES CROSS AT LAST HOLDDOWN.
9 ADJUST TABLE TO THE SAME CLEARANCE AS THAT AT THE
FIRST HOLDDOWN.
10 TIGHTEN NUTS HOLDING TABLE TO BED.
11 LOWER RAM AGAIN.
12 ADJUST RAM BRACE FOR CENTER OF KNIFE CLEARANCE.
13 CHECK CLEARANCE AT SEVERAL POINTS.
14 REINSTALL FLYWHEEL GUARD.
15 REINSTALL BOLTS HOLDING GUARD.
16 CHECK OPERATION OF SHEARS.

NT 183 1 PLACE AND REMOVE SAFETY BLOCKING UNDER RAM.
2 INSTALL "U" WASHER ON PULL ROD 2 TIMES.
3 REMOVE AND INSTALL COTTER PIN PULL ROD NUT.
4 BACK NUT AGAINST "U" WASHER 2 TIMES.
5 REMOVE AND INSTALL COTTER PIN IN PIVOT.
6 REMOVE AND INSTALL PIVOT PIN IN PULL ROD.
7 REMOVE AND INSTALL NUTS HOLDING LOWER SPRING SEATS
.
8 REMOVE AND INSTALL BOLTS AND WASHER.
9 REMOVE AND INSTALL SPRING SEATS.
10 REMOVE AND INSTALL NUT TO SHIELD BOLTS.
11 REMOVE AND INSTALL BOLTS AND WASHERS.
12 REMOVE AND INSTALL SPRING SHIELDS.
13 REMOVE AND INSTALL SPRING SETS.
14 SET UP ARBOR PRESS AND COMPRESS SPRINGS.
15 REMOVE AND INSTALL NUT TO PULL ROD.
16 REMOVE AND REINSTALL UPPER SPRING SEAT FROM ASSEMB
LY.
17 MATERIAL HANDLING.

NT 184 1 INSTALL AND REMOVE JACK UNDER EACH END OF RAM.
2 REMOVE SOCKET STUDS HOLDING INNER ADJUSTING BRACKETS.
3 SLIDE ADJUSTMENT BRACKETS TOWARDS CENTER.
4 DRIVE TAPER PINS OUT OF PINIONS.
5 REMOVE ADJUSTING SHAFT.
6 REMOVE ADJUSTING BRACKETS AND PINIONS.
7 WELD UP FOUR TAPER PIN HOLES IN THE SHAFT AND FOUR IN PINIONS.
8 TEMPORARILY REPLACE THE INNER ADJUSTING BRACKETS WITHOUT SCREWS.
9 TAP GEAR TEETH OF 2 ECCENTRICS UNTIL ZERO LINES COINCIDE CORRECTLY.
10 ADJUST JACKS UNDER RAM.
11 REMOVE ADJUSTING BRACKETS.
12 REINSTALL PINIONS ON SHAFT.
13 REINSTALL SHAFT.
14 REINSTALL ADJUSTING BRACKETS.
15 REINSTALL STUDS AND NUTS.
16 DRILL HOLES FOR TAPER PINS.
17 DRIVE TAPER PINS.
18 LOOSEN NUT ON STUD ON INNER ADJUSTING BRACKET.
19 ROTATE ADJUSTING SHAFT UNTIL DESIRED SETTING IS REACHED (2 ADJUSTMENTS EACH END).
20 TIGHTEN NUT ON STUD.
21 CHECK OPERATION OF SHEAR.
22 REAM HOLES FOR TAPER PINS.

NT 185 1 REMOVE CLUTCH AND SPIDER ASSEMBLY AND DRAIN OIL.
2 INSTALL CLUTCH AND SPIDER ASSEMBLY AND FILL OIL.

NT 186 1 PLACE WOODEN BLOCKS ON TABLE TO SUPPORT UPPER KNIFE BLACE WHEN UNBOLTED.
2 INSTALL AND REMOVE "C" CLAMPS.
3 REMOVE NUTS FROM UPPER KNIFE BOLTS.
4 REMOVE LOCKWASHERS FROM BOLTS.
5 PUSH OUT KNIFE BOLTS BETWEEN HOLD DOWNS.
6 PUSH KNIFE TO RIGHT TO ANGLE REMAINING BOLTS.
7 PUSH OUT REMAINING KNIFE BOLTS.
8 SLIDE UPPER KNIFE FROM MACHINE AND REINSTALL.
9 CLEAN KNIFE AND KNIFE SEAT IN RAM.
10 REPLACE KNIFE BOLTS WHICH AREA TAKEN OUT AT AN ANGLE.
11 PUSH KNIFE TO NORMAL POSITION.
12 REPLACE REMAINING KNIFE BOLTS.
13 REPLACE WASHERS ON KNIFE BOLTS.
14 REPLACE NUTS.
15 HOLD UPPER KNIFE BLADE TIGHT AGAINST SEAT AND TIGHTEN CENTER BOLT.
16 REPEAT FOR ALL KNIFE BOLTS.
17 REMOVE WOODEN BLOCKS FROM TABLE.
18 REMOVE SOCKET SCREWS FROM COVER.
19 REMOVE COVER PLATE FROM SHEAR TABLE.
20 REMOVE NUTS FROM LOWER KNIFE BOLTS.
21 REMOVE WASHERS FROM BOLTS.
22 PUSH OUT KNIFE BOLTS.
23 REMOVE LOWER KNIFE.
24 CLEAN KNIFE AND KNIFE SEAT.
25 CLEAN TABLE COVER RECESS.
26 CLEAN KNIFE SHIM PINS AND SPRINGS.
27 PLACE SHIM PACKS ON TABLE.
28 SET KNIFE ON SEAT WITHOUT SHIMS OR BOLTS.
29 RUN BACK GAUGE ANGLE FORWARD TO HOLD KNIFE AGAINST TABLE.

30 LAY TABLE COVER IN PLACE WITHOUT SCREWS.
31 PLACE END GROUP OF SHIM ON KNIFE TO BE FLUSH WITH
TOP OF TABLE COVER AND COMPRESS WITH WEDGE BLOCK A
32 REPEAT FOR SHIMS AT EACH HOLDDOWN (2 ADJUSTMENTS P
ER SHIM).
33 REMOVE TABLE COVER.
34 RUN BACK GAUGE AWAY FROM KNIFE.
35 RAISE KNIFE HIGH ENOUGH TO CLEAR SHIMS.
36 INSTALL 2 END AND 1 CENTER KNIFE BOLTS.
37 INSTALL WASHERS ON BOLTS.
38 INSTALL NUTS ON END AND CENTER BOLT.
39 INSTALL SHIMS UNDER KNIFE.
40 LOWER KNIFE.
41 INSTALL REMAINING KNIFE BOLTS.
42 INSTALL WASHERS ON BOLTS.
43 INSTALL REMAINING NUTS.
44 INSTALL TABLE COVER.
45 INSTALL SOCKET SCREWS IN COVER.
46 CHECK KNIFE LEVEL WITH TABLE TOP.

NT 187 1 CHANGE KNIFES ON POWER SHEARS.
2 SET CLEARANCES OF KNIFES ON POWER SHEARS.
3 REMOVE AND INSTALL KNIFE GUARD ON POWER SHEARS.

NT 188 1 REMOVE AND INSTALL MANHOLE COVER.
2 GET INSTRUMENTS TO TEST FOR GAS FUMES
3 PREPARE INSTRUMENTS TO TEST
4 OBTAIN AIR SAMPLE
5 TAKE READING OF AIR FOR GAS CONTENT
6 RECORD FINDINGS ON WORKSHEET
7 PREPARE INSTRUMENTS FOR STORAGE
8 PUT INSTRUMENTS AWAY
9 INSTALL AND REMOVE SAFETY GUARD AROUND MANHOLE (GU ARD USED ON 1/3 OF MANHOLES).
10 WALK UP AND DOWN LADDER.
11 UNSCREW ELECTRIC CORD PLUG.
12 REMOVE PLUG.
13 DISCONNECT DISCHARGE AT UNION.
14 REMOVE OR INSTALL 1.25" X 12" PIPE LENGTH WITH 14" PIPE WRENCH.
15 CLEAN PIPE THREADS WITH WIRE BRUSH.
16 APPLY TEFLON TAPE TO PIPE THREADS BEFORE ASSEMBLY.
17 REMOVE OR INSTALL PUMP ASSEMBLY IN MANHOLE.
18 INSTALL PIPE.
19 CONNECT PUMP TO DISCHARGE PIPE.
20 TEST RUN PUMP MOTOR AND CHECK FOR LEAKS AND FLOAT OPERATION.

NT 189 1 TURN SWITCH TO "OFF".
2 TAG SWITCH "DO NOT OPEN".
3 CLOSE SUCTION AND DISCHARGE VALVE, OPEN BY-PASS VA LVE (3 VALVES).
4 REMOVE 2 SCREWS CONNECTING BOX COVER PLATE.
5 REMOVE COVER PLATE FOR CONNECTION BOX.
6 DISCONNECT 3 WIRES.
7 INSULATE 3 WIRE ENDS WITH TAPE.
8 DISASSEMBLE 2 PIPE UNIONS.
9 REMOVE PUMP AND MOTOR ASSEMBLY.
10 MATERIAL HANDLING.

NT 190 1 REMOVE 4 NUTS, BOLTS, AND BEARING HOUSING END PLAT ES.
2 REMOVE 4 BOLTS.
3 REMOVE BEARING HOUSING END PLATE.
4 REMOVE 2 STUD BOLTS, BEARING HOUSING TOP HALF.
5 REMOVE BEARING HOUSING TOP HALF.
6 CLEAN FACE OF END PLATE.
7 CLEAN FACE OF BEARING HOUSING TOP HALF.
8 CLEAN FACE OF BEARING HOUSING LOWER HALF.
9 APPLY SHELLAC TO SEALING SURFACES.
10 INSTALL BEARING HOUSING TOP HALF.
11 INSTALL 2 STUD BOLTS.
12 INSTALL END COVER PLATE.
13 INSTALL 4 BOLTS ON END COVER PLATE.
14 INSTALL 4 NUTS ON END COVER PLATE BOLTS.

NT 191 1 REMOVE DRAIN PLUG.
2 REMOVE 8 STUD BOLTS ON FRONT HOUSING COVER.
3 REMOVE FRONT COVER PLATE.
4 REMOVE CHECK VALVE ASSEMBLY.
5 REMOVE COVER PLATE GASKET.
6 CLEAN GASKET AREA ON COVER PLATE AND PUMP BODY.
7 INSPECT CHECK VALVE ASSEMBLY.
8 INSTALL CHECK VALVE ASSEMBLY.
9 INSTALL GASKET AND COVER PLATE.
10 INSTALL 8 STUD BOLTS ON COVER PLATE.
11 INSTALL DRAIN PLUG.

NT 192 1 REMOVE 10 STUD BOLTS ON HOUSING TO PUMP BODY.
2 REMOVE HOUSING.
3 REMOVE GASKET HOUSING TO PUMP BODY.
4 CLEAN GASKET AREA HOUSING TO PUMP BODY.
5 INSTALL GASKET HOUSING TO PUMP BODY.
6 ASSEMBLE HOUSING TO PUMP BODY.
7 INSTALL 10 STUD BOLTS ON HOUSING TO PUMP BODY.

NT 193 1 LOOSEN COUPLING FROM PUMP SHAFT.
2 REMOVE 4 STUD BOLTS HOLDING MOTOR TO BEARING BRACK
ET.
3 REMOVE MOTOR.
4 REMOVE 4 STUD BOLTS HOLDING BEARING BRACKET TO PUM
P BODY.
5 REMOVE BEARING BRACKET, SHAFT AND IMPELLER AS A UN
IT.
6 REMOVE IMPELLER NUT.
7 REMOVE IMPELLER FROM SHAFT.
8 REMOVE SEAL ASSEMBLY WASHERS.
9 REMOVE SEAL ASSEMBLY SPRING.
10 REMOVE SEAL AND RUBBER.
11 INSPECT BEARING BRACKETS SEALING FACE.
12 CLEAN SEALING FACE OF BEARING BRACKET.
13 INSPECT SHAFT.
14 CLEAN SHAFT.
15 INSTALL NEW SEAL AND RUBBER.
16 INSTALL SEAL SPRING.
17 INSTALL SEAL WASHERS.
18 INSTALL IMPELLER ON SHAFT.
19 INSTALL IMPELLER NUT ON SHAFT.
20 CLEAN PUMP BODY GASKET AREA.
21 INSTALL NEW GASKET (READY MADE).
22 INSTALL IMPELLER, SHAFT AND BEARING HOUSING INTO P
UMP BODY AS A UNIT.
23 INSTALL 4 STUD BOLTS ON BEARING BRACKET TO PUMP BO
DY.
24 ASSEMBLE MOTOR TO BEARING BACKET (INCLUDES MOTOR C
OUPLING TO PUMP SHAFT).
25 INSTALL 4 STUD BOLTS ON BEARING BRACKET TO MOTOR (
TIGHTEN LIGHTLY AND EVENLY).
26 TIGHTEN COUPLING SET SCREW ON PUMP SHAFT.
27 FINAL TIGHTEN OF 4 STUD BOLTS ON BEARING BRACKET T
O MOTOR.
28 TEST RUN.

NT 194 1 REMOVE AND REINSTALL SUCTION CHECK VALVE.
2 REMOVE DIFFUSER CASTING.
3 REMOVE IMPELLER NUT.
4 REMOVE IMPELLER.
5 REMOVE WOODRUFF KEY.
6 INSTALL WOODRUFF KEY.
7 INSTALL IMPELLER.
8 INSTALL IMPELLER NUT.

NT 195 1 LOOSEN SET SCREW ON PUMP HALF COUPLING.
2 REMOVE PUMP HALF COUPLING.
3 REMOVE SHAFT KEY COUPLING.
4 LOOSEN 4 SET SCREWS ON THRUST COLLARS.
5 REMOVE OUTER THRUST COLLAR.
6 REMOVE 4 SCREWS ON BEARING HOUSING PLATE.
7 REMOVE BEARING HOUSING PLATE.
8 REMOVE 4 STUD BOLTS ON BEARING BRACKET TO PUMP.
9 REMOVE BEARING BRACKET.
10 REMOVE BEARING BRACKET GASKET TO PUMP BODY.
11 CLEAN GASKET AREA, PUMP BODY AND BEARING BRACKET.
12 REMOVE SHAFT SEAL ASSEMBLY.
13 CLEAN SEALING SURFACES OF MECHANICAL SEAL.
14 INSTALL SHAFT SEAL ASSEMBLY.
15 INSTALL BEARING BRACKET GASKET.
16 POSITION BEARING BRACKET OVER END OF SHAFT.
17 INSTALL INNER THRUST COLLAR.
18 ASSEMBLE BEARING BRACKET TO PUMP BODY.
19 INSTALL 4 STUD BOLTS ON BEARING BRACKET.
20 INSTALL BALL BEARING.
21 INSTALL BEARING COVER PLATE.
22 INSTALL 4 SCREWS ON BEARING COVER PLATE.
23 INSTALL OUTER THRUST COLLAR.
24 TIGHTEN 4 SET SCREWS ON THRUST COLLARS.
25 INSTALL COUPLING HALF SHAFT KEY.
26 INSTALL COUPLING HALF.
27 TIGHTEN COUPLING HALF SET SCREW.

NT 196 1 REMOVE AND INSTALL ROTOR HOUSING.
2 REMOVE 6 STUD BOLTS ON STUB SHAFT HOUSING TO ROTOR HOUSING.
3 REMOVE STUB SHAFT HOUSING GASKET TO ROTOR HOUSING.
4 CLEAN STUB SHAFT HOUSING GASKET AREA AND ROTOR HOUSING.
5 REMOVE STUB SHAFT BUSHING.
6 INSTALL STUB SHAFT BUSHING.
7 INSTALL GASKET AND STUB SHAFT HOUSING TO ROTOR HOUSING.
8 INSTALL 6 STUD BOLTS ON STUB SHAFT HOUSING TO ROTOR HOUSING.

NT 197 1 REMOVE AND INSTALL IMPELLER.
2 REMOVE SEAL CUSHION.
3 REMOVE SEAL BELT SPRING.
4 REMOVE SEAL DISC.
5 REMOVE SEAL FIXED COLLAR.
6 REMOVE SEAL FIXED COLLAR GASKET.
7 CLEAN GASKET AREA ON LANTERN.
8 CLEAN GASKET AREA ON FIXED COLLAR.
9 INSTALL NEW FIXED COLLAR GASKET.
10 INSTALL FIXED COLLAR.

NT 198 1 REMOVE 4 SCREWS FROM SWITCH COVER PLATE.
2 REMOVE SWITCH COVER PLATE.
3 DISCONNECT WIRES AT 3 TERMINALS.
4 REMOVE 2 SWITCH BRACKET SCREWS.
5 REMOVE SWITCH ASSEMBLY.
6 REMOVE FLOAT ROD SPRING RETAINER PIN.
7 UNSCREW MOTOR FROM PUMP TUBE.
8 INSERT FLOAT ROD THROUGH MOTOR END BELL GUIDE HOLE AND FLOAT ROD SPRING.
9 INSTALL SPRING RETAINERS OVER FLOAT ROD END.
10 ENGAGE SPRING COUPLING WITH SLOT IN MOTOR SHAFT.
11 SCREW MOTOR ON TO PUMP TUBE.
12 INSTALL FLOAT ROD RETAINER PIN.
13 INSTALL SWITCH ASSEMBLY.
14 INSTALL 2 SWITCH BRACKET SCREWS.
15 CONNECT WIRES AT 3 TERMINALS.
16 INSTALL SWITCH COVER PLATE.
17 INSTALL 4 COVER PLATE SCREWS.
18 REMOVE IMPELLER SHAFT DRIVE PIN.
19 LOOSEN IMPELLER SHAFT COUPLING ADAPTER COLLAR SET SCREW.
20 REMOVE IMPELLER SHAFT COUPLING ADAPTER COLLAR.
21 REMOVE 4 SCREWS ON PUMP BASE TO PUMP HOUSING.
22 REMOVE PUMP BASE.
23 REMOVE 4 PUMP HOUSING PLATE SCREWS.
24 REMOVE PUMP HOUSING PLATE.
25 REMOVE IMPELLER SHAFT AND IMPELLER, SHAFT ADAPTER AND IMPELLER SHAFT BELL BEARING.
26 REMOVE PUMP BEARING.
27 REMOVE PUMP BEARING PACKING GLAND RETAINER.
28 REMOVE PUMP BEARING PACKING GLAND.
29 REMOVE PUMP BEARING PACKING, SPRING AND WASHER.
30 ASSEMBLE PUMP BEARING PACKING GLAND WITH NEW PACKI NG (4 RINGS), SPRING AND WASHER.
31 INSTALL PUMP BEARING PACKING GLAND AND RETAINER IN TO BEARING.
32 INSTALL PUMP BEARING INTO PUMP TUBE.
33 REMOVE IMPELLER PIN.
34 REMOVE IMPELLER FROM SHAFT.
35 ASSEMBLE IMPELLER, IMPELLER SHAFT AND IMPELLER PIN .
36 INSTALL IMPELLER SHAFT INTO PUMP TUBE.
37 INSTALL IMPELLER SHAFT BALL BEARING RETAINER.
38 INSTALL IMPELLER SHAFT BALL BEARING.
39 INSTALL IMPELLER SHAFT BALL BEARING OIL RETAINER.
40 INSTALL IMPELLER SHAFT COUPLING ADAPTER.
41 INSTALL IMPELLER SHAFT COUPLING ADAPTER COLLAR.
42 INSTALL IMPELLER SHAFT DRIVE PIN.
43 ADJUST IMPELLER SHAFT COUPLING ADAPTER COLLAR.
44 TIGHTEN IMPELLER SHAFT COUPLING ADAPTER COLLAR SET SCREW.
45 INSTALL IMPELLER SHAFT COUPLING SPRING ON SHAFT.

NT 199 1 REMOVE 4 PACKING GLAND NUTS.
2 DISENGAGE 2 GLANDS FROM HOUSING.
3 REMOVE 8 RINGS OF PACKING.
4 CLEAN OUT 2 GLAND HOUSINGS.
5 CLEAN 2 GLANDS.
6 MEASURE AND CUT 8 RINGS OF PACKING.
7 INSTALL 8 RINGS OF PACKING.
8 ASSEMBLE 2 GLANDS OVER STUDS.
9 INSTALL 4 NUTS ON GLANDS.
10 ADJUST 2 GLANDS.
11 LOOSEN SET SCREW IN PUMP HALF COUPLING.
12 REMOVE 8 OPEN END COVER PLATE STUD BOLTS TO PUMP B ODY.
13 LOOSEN 8 SETS ADJUSTING NUT LOCKING SCREWS.
14 REMOVE 4 SHAFT AND BEARING ALIGNMENT ADJUSTING SCR EWS.
15 REMOVE OPEN END COVER PLATE, SHAFT, IMPELLERS, AND SPACER AS A UNIT.
16 REMOVE BALL BEARING JAM NUT FROM SHAFT.
17 REMOVE OPEN END COVER PLATE AND BALL BEARING FROM SHAFT.
18 CLEAN GASKET AREA ON COVER PLATE.
19 CLEAN GASKET AREA ON PUMP BODY.
20 INSTALL COUPLING END OF SHAFT THROUGH COUPLING END COVER PLATE GLAND FROM PUMP SIDE.
21 INSTALL WATER SLINGER AND INNER ADJUSTING NUT OVER SHAFT END.
22 PUSH SHAFT THROUGH BEARING HOUSING.
23 INSTALL COUPLING END BALL BEARING.
24 INSTALL OUTER ADJUSTING NUT OVER SHAFT.
25 SCREW 2 ADJUSTING NUTS INTO HOUSING.
26 ASSEMBLE WOODRUFF KEY INTO SHAFT.
27 ASSEMBLE COUPLING HALF ON SHAFT.
28 POSITION COUPLING INSERT AND COUPLING HALF.
29 TIGHTEN COUPLING HALF SET SCREW.
30 INSTALL OUTER COVER PLATE OVER SHAFT.
31 INSTALL WATER SLINGER AND INNER ADJUSTING NUT OVER SHAFT.
32 ASSEMBLE GASKET AND COVER PLATE TO PUMP BODY.
33 INSTALL 8 COVER PLATE STUD BOLTS.
34 INSTALL BALL BEARING ON SHAFT.
35 INSTALL JAM NUT ON SHAFT DRAWING BEARING UP TIGHT.
36 SCREW 2 ADJUSTING NUTS INTO HOUSING.
37 ADJUST AXIAL POSITION OF SHAFT WITH 2 ADJUSTING NU TS.
38 ADJUST AXIAL POSITION OF BALL BEARING WITH 2 ADJUS TING NUTS.
39 TIGHTEN 8 ADJUSTING NUT LOCKING SET SCREWS.

NT 200 1 REMOVE AND INSTALL SUMP PUMP.
2 REMOVE AND INSTALL MOTOR; REMOVE AND INSTALL SHAFT PACKING, SHAFT BEARING, SHAFT OR IMPELLER IN SHOP

NT 201 1 REMOVE AND REINSTALL SHAFT SEAL.
2 REMOVE 8 PUMP STUD BOLTS TO LANTERN.
3 REMOVE 2 PUMP MOUNTING NUTS.
4 REMOVE 2 PUMP MOUNTING BOLTS.
5 REMOVE PUMP FROM BASE.
6 PRY GREASE RETAINER OUT OF HOUSING.
7 INSTALL GREASE RETAINER.
8 ASSEMBLE PUMP ON TO BASE (SHAFT THROUGH GREASE RET AINER).
9 INSTALL 2 PUMP MOUNTING BOLTS.
10 INSTALL 2 MOUNTING BOLTS NUTS.
11 INSTALL 8 PUMP STUD BOLTS TO LANTERN.
12 ALIGN PUMP TO MOTOR.

NT 202 1 SECURE PUMP 2 VALVES.
2 PULL MOTOR SWITCH "OFF".
3 REMOVE NUTS.
4 REMOVE BOLTS.
5 REMOVE BOLTS AND NUTS.
6 REMOVE TAPER PINS.
7 INSTALL "JACK SCREWS".
8 REMOVE COVER FROM CASE.
9 REMOVE NUTS FROM COUPLING.
10 REMOVE CAP SCREWS.
11 BACK OUT SET SCREW.
12 SLIDE COUPLING COVERS APART.
13 REMOVE GRID FROM COUPLING HUBS.
14 REMOVE NUTS FROM BEARING CAPS.
15 REMOVE BEARING CAPS.
16 LIFT OUT ROTATING ELEMENT TO BENCH OR AREA.
17 LOOSEN SET SCREW IN COUPLING LOCK NUT.
18 REMOVE LOCK NUT.
19 LOOSEN SET SCREW IN COUPLING.
20 PULL AND REMOVE COUPLING.
21 REMOVE BOLTS AND NUTS FROM GLAND PIECES.
22 REMOVE GLANDS.
23 LOOSEN SET SCREW IN SLINGER.
24 MOVE SLINGER PIECE AND BEARING HOUSING ON SHAFT.
25 LOOSEN LOCK NUT AND REMOVE.
26 PULL AND REMOVE BEARING, SPACER, BEARING HOUSING, AND SLINGER.
27 REMOVE THRUST BEARING HEAD PIECE.
28 REMOVE BEARING LOCK NUT.
29 REMOVE BEARING HOUSING AND SLINGER.
30 REMOVE PACKING RINGS.
31 REMOVE WATER SEAL RINGS.
32 REMOVE THROAT LINERS.
33 REMOVE SCREWS FROM SHAFT SLEEVES.
34 REMOVE SHAFT SLEEVES.
35 MARK POSITION OF IMPELLER.
36 REMOVE IMPELLER.
37 MATERIAL HANDLING FROM SITE TO SHOP.
38 TAG SWITCH AND VALVES.

NT 203 1 LOOSEN SET SCREW IN PUMP HALF COUPLING.
2 REMOVE 16 COVER PLATE STUD BOLTS TO PUMP CASING.
3 LOOSEN 8 ADJUSTING NUT LOCKING SET SCREWS.
4 REMOVE 2 COUPLING END COVER PLATE ADJUSTING NUTS.
5 REMOVE 2 COUPLING END COVER PLATE PACKING GLAND NU TS.
6 BACK OFF PACKING GLAND.
7 REMOVE OPEN END COVER PLATE, SHAFT AND IMPELLER AS A UNIT.
8 REMOVE COUPLING END COVER PLATE.
9 REMOVE 2 AJUSTING NUTS ON OPEN END COVER PLATE.
10 REMOVE BALL BEARING JAM NUT FROM SHAFT.
11 REMOVE 2 OPEN END COVER PLATE PACKING GLAND NUTS.
12 BACK OFF PACKING GLAND.
13 REMOVE OPEN END COVER PLATE AND BALL BEARING FROM SHAFT.
14 LOOSEN IMPELLER SET SCREW TO SHAFT.
15 REMOVE IMPELLER.
16 REMOVE PACKING, 4 RINGS EACH FROM 2 END COVER PLAT E GLANDS.
17 REMOVE GASKETS FROM 2 END COVER PLATES.
18 CLEAN GASKET AREA ON 2 END COVER PLATES.
19 CLEAN GASKET AREA ON 2 SIDES OF PUMP BODY.
20 ASSEMBLE WOODRUFF KEY IN SHAFT FOR IMPELLER.
21 ASSEMBLE IMPELLER ON SHAFT.
22 ASSEMBLE COUPLING END COVER PLATE ON PUMP BODY WIT H GASKET.
23 INSTALL 8 COVER PLATE STUD BOLTS.
24 INSTALL COUPLING END OF SHAFT THROUGH COVER PLATE GLAND FROM PUMP SIDE.
25 INSTALL PACKING GLAND, WATER SLINGER AND INNER ADJ USTING NUT.
26 PUSH SHAFT THROUGH BEARING HOUSING.
27 INSTALL COUPLING END BALL BEARING ON SHAFT.
28 INSTALL OUTER ADJUSTING NUT OVER SHAFT END.
29 SCREW 2 ADJUSTING NUTS INTO BEARING HOUSING.
30 ASSEMBLE COUPLING WOODRUFF KEY TO SHAFT.
31 ASSEMBLE COUPLING HALF ON PUMP SHAFT.
32 POSITION COUPLING INSERT AND COUPLING.
33 TIGHTEN COUPLING HALF SET SCREW.
34 INSTALL OUTER COVER PLATE OVER SHAFT.
35 INSTALL PACKING GLAND, WATER SLINGER AND INNER ADJ USTING NUT OVER SHAFT.
36 ASSEMBLE GASKET AND COVER PLATE TO PUMP BODY.
37 INSTALL 8 COVER PLATE STUD BOLTS.
38 INSTALL BALL BEARING ON SHAFT.
39 INSTALL JAM NUT ON SHAFT DRAWING BEARING UP TIGHT.
40 INSTALL 2 ADJUSTING NUTS TO OUTER COVER PLATE.
41 MEASURE AND CUT 8 RINGS OF PACKING.
42 INSTALL 4 RINGS OF PACKING IN 2 PACKING GLANDS.
43 ASSEMBLE 2 PACKING GLANDS OVER STUDS.
44 ASSEMBLE 2 NUTS EACH ON 2 GLANDS (LOOSELY).
45 ADJUST AXIAL POSITION OF SHAFT AND IMPELLER WITH 2 ADJUSTING NUTS.
46 ADJUST AXIAL POSITION AT COUPLING END BALL BEARING WITH TWO ADJUSTING NUTS.
47 TIGHTEN 8 ADJUSTING NUT LOCKING SET SCREWS.
48 ADJUST TWO PACKING GLANDS TO PROPER TIGHTNESS.
49 REMOVE SPACER FROM SHAFT AND REINSTALLL.
50 REMOVE WOODRUFF KEY FROM SHAFT AND REINSTALL.
51 REMOVE IMPELLER SET SCREW TO SHAFT AND REINSTALL.
52 REMOVE IMPELLER FROM SHAFT AND REINSTALL.
53 REMOVE WOODRUFF KEY FROM SHAFT AND REINSTALL.
54 REMOVE BUSHING FROM SPACER AND REINSTALL.

NT 204 1 REMOVE PUMP SEALS.
2 REMOVE BEARING SLEEVE.
3 REMOVE NUTS FROM BEARING HOUSING.
4 REMOVE BEARING HOUSING.
5 REMOVE IMPELLER.
6 REMOVE KEY FROM SHAFT.
7 REMOVE SPACER.
8 REMOVE NUTS FROM NEXT BOWL.
9 REMOVE BOWL.
10 REMOVE IMPELLER.
11 REMOVE KEY FROM SHAFT.
12 REMOVE SPACER.
13 REMOVE NUTS FROM THIRD BOWL.
14 REMOVE SECOND BOWL.
15 REMOVE IMPELLER.
16 REMOVE KEY FROM SHAFT.
17 REMOVE SPACER.
18 REMOVE NUTS FROM FOURTH BOWL.
19 REMOVE THIRD BOWL.
20 REMOVE IMPELLER.
21 REMOVE KEY FROM SHAFT.
22 REMOVE SPACER.
23 REMOVE NUTS FROM FIFTH BOWL.
24 REMOVE FOURTH BOWL.
25 REMOVE IMPELLER.
26 REMOVE KEY.
27 REMOVE SPACER.
28 REMOVE NUTS FROM TAIL PIECE HOUSING.
29 REMOVE FIFTH BOWL.

NT 205 1 "OPEN" AND "CLOSE" SWITCH ON PUMP CONTROLLER.
2 REMOVE AND INSTALL 4 MOTOR SHAFT END COVER STUD BO
LTS.
3 REMOVE AND INSTALL MOTOR SHAFT AND COVER.
4 REMOVE AND INSTALL 6 MOTOR DRIVE COUPLING BOLTS.
5 DISCONNECT AND CONNECT SHORT MOTOR SHAFT AND PUMP
SHAFT ALIGNING COUPLING.
6 REMOVE AND INSTALL 8 MOTOR YOKE NUTS TO DISCHARGE
BASE BOLTS.
7 REMOVE AND INSTALL 8 MOTOR YOKE BOLTS TO DISCHARGE
BASE.
8 REMOVE AND INSTALL MOTOR AND YOKE FROM PUMP ASSEMB
LY.
9 REMOVE 2 AUXILIARY PACKING GLAND STUD BOLTS AND IN
STALL.
10 REMOVE AUXILIARY GLAND AND INSTALL.
11 REMOVE 2 RINGS OF PACKING AND INSTALL.
12 REMOVE 4 SEAL CHAMBER GLAND STUD BOLTS AND INSTALL
13 REMOVE SEAL CHAMBER GLAND AND INSTALL.
14 REMOVE INSERT RING AND INSTALL.
15 REMOVE SEAL RING AND INSTALL.
16 REMOVE SHAFT PACKING "O" RING AND INSTALL.
17 INSPECT INSERT RING AND SEAL RING FOR DIRT AND DAM
AGE.
18 WIPE INSERT RING AND SEAL RING CLEAN.

NT 206 1 REINSTALL KEYS TO SHAFT.
2 REINSTALL IMPELLERS TO SHAFT.
3 REINSTALL BOWLS.
4 REINSTALL NUTS TO BOWLS.
5 REINSTALL SPACERS.
6 REINSTALL BEARING TO PUMP.
7 REINSTALL FIRST BOWL SECTION.
8 REINSTALL PUMP SEALS.
9 ADJUST PUMP SHAFT FOR PROPER CLEARANCE.
10 CHECK OPERATION OF PUMP BY HAND.
11 HANDLING TIME FOR MOVING OF PARTS TO ASSEMBLY AREA AND SETTING UP PUMP ON "WORKHORSES".

NT 207 1 TAG PUMP CONTROLLER AND REMOVE.
2 CLOSE 2 VALVES AND OPEN.
3 REMOVE 4 SUCTION FLANGE NUTS AND INSTALL.
4 REMOVE 4 SUCTION FLANGE BOLTS AND INSTALL.
5 OPEN DISCHARGE UNION AND INSTALL.
6 REMOVE AND INSTALL 4 PUMP MOUNTING BOLTS.
7 MOVE PUMP TO REMOVE AND ENGAGE COUPLING.
8 INSTALL AND REMOVE 4 MOUNTING BOLTS (TEMPORARY TO PREVENT LOSS).
9 REMOVE AND INSTALL DISCHARGE HOSE FROM RELIEF VALV E AND PUMP DISCHARGE ASSEMBLY.
10 CLEAN SUCTION FLANGES.
11 INSTALL GASKET AND BLANK FLANGE AND REMOVE.
12 INSTALL 4 BOLTS AND REMOVE.
13 INSTALL 4 NUTS AND REMOVE.
14 ATTACH COUPLING WITH WIRE TO PREVENT LOSS AND REMO VE.
15 MOVE PUMP TO TRUCK AND RETURN.
16 REMOVE 24 CASING BOLTS NUT.
17 REMOVE 24 BOLTS.
18 REMOVE TOP CASING.
19 REMOVE CASING GASKET.
20 CLEAN CASING GASKET AREA.
21 INSTALL GASKET.
22 INSTALL TOP CASING.
23 INSTALL 24 CASING BOLTS.
24 INSTALL 24 CASING BOLTS NUTS.

NT 208 1 REMOVE OR INSTALL NUTS TO BOLTS ON DISCHARGE PIPE.
2 REMOVE OR INSTALL BOLTS.
3 REMOVE OR INSTALL GASKET.
4 REMOVE OR INSTALL 8" DISCHARGE PIPE.
5 UNFASTEN OR FASTEN OIL LINE FROM OIL FEEDER.
6 REMOVE OR INSTALL OIL FEEDER.
7 REMOVE OR INSTALL BOLTS FROM MOTOR SUPPORT.
8 RAISE, POSITION AND RELEASE SUPPORT.
9 REMOVE OR INSTALL BOLTS FROM PUMP FLANGE.
10 RAISE, POSITION AND RELEASE PUMP CASING.
11 ATTACH HOLD CLAMPS TO PUMP CASING.
12 INSTALL BOLTS AND NUTS TO CLAMP.
13 TIGHTEN OR LOOSEN NUTS.
14 REMOVE OR INSTALL TOP SECTION OF PUMP CASING.
15 RAISE, POSITION AND RELEASE TOP SECTION OF CASING.
16 REMOVE OR INSTALL SHAFT CASING.
17 RAISE, POSITION AND RELEASE SHAFT CASING.
18 REMOVE OR INSTALL SHAFT.
19 REMOVE OR INSTALL COUPLING.
20 REMOVE OR INSTALL COPPER OIL LINE.
21 REMOVE OR INSTALL 4 BOLTS AT SHAFT END COVER.
22 REMOVE OR INSTALL SHAFT AND COVER.
23 REMOVE OR INSTALL 6 MOTOR DRIVE COUPLING BOLTS.

24 DISCONNECT OR CONNECT SHORT MOTOR SHAFT AND PUMP S HAFT COUPLING.
25 REMOVE OR INSTALL 8 NUTS IN MOTOR YOKE TO DISCHARG E BASE.
26 REMOVE OR INSTALL 8 BOLTS IN MOTOR YOKE TO DISCHAR GE BASE.
27 REMOVE OR INSTALL MOTOR AND YOKE FROM COLUMN.

NT 209 1 CUT POWER OFF AND ON.
2 TAG SWITCH AND REMOVE.
3 CLOSE 2 VALVES AND OPEN.
4 REMOVE 16 NUTS SECTION AND DISCHARGE FLANGES AND I NSTALL.
5 REMOVE AND INSTALL BOLTS FOR ABOVE.
6 REMOVE COUPLING SCREWS AND INSTALL.
7 REMOVE 4 MOUNT BOLTS AND INSTALL.
8 INSTALL 16 NUTS AND BOLTS TO FLANGES TO PREVENT LO SS AND REMOVE.
9 TAG COUPLING TO PREVENT LOSS AND REMOVE.
10 REMOVE PRESSURE GAUGE AND INSTALL.
11 SLIDE PUMP FROM MOTOR AND INSTALL.
12 CLEAN FLANGES.
13 INSTALL GASKET AND BLANK FLANGE AND REMOVE.
14 MATERIAL HANDLING-PUMP IN AND OUT.
15 LEVEL AND ALIGN PUMP.
16 REMOVE AND INSTALL SHAFT SEAL.
17 REMOVE AND INSTALL ROTOR HOUSING.
18 REMOVE ROTOR AND SHAFT.
19 INSTALL ROTOR AND SHAFT.
20 INSTALL AND REMOVE 4 MOUNT BOLTS TO PREVENT LOSS.

NT 210 1 REMOVE 24 CASING NUTS.
2 REMOVE 24 BOLTS.
3 REMOVE TOP CASING.
4 REMOVE CASING GASKET.
5 CLEAN GASKET AREA.
6 INSTALL GASKET.
7 INSTALL TOP CASING.
8 INSTALL 24 CASING BOLTS.
9 INSTALL 24 NUTS.
10 REMOVE AND INSTALL BALL BEARING HOUSING COVERS.
11 LOOSEN GLAND NUTS.
12 MOVE GLAND BOLTS ASIDE.
13 REMOVE 6 COUPLING BOLTS.
14 REMOVE SHAFT, IMPELLER, WEARING RINGS, BEARINGS, P ACKING AND PACKING GLANDS AS A UNIT.
15 LOOSEN PUMP HALF COUPLING SET SCREW.
16 REMOVE PUMP HALF COUPLING.
17 REMOVE COUPLING SHAFT KEY.
18 REMOVE 2 PACKING GLAND STUD BOLTS.
19 REMOVE 2 PACKING GLANDS.
20 REMOVE 10 RINGS PACKING.
21 REMOVE 4 BALL BEARING RETAINING NUTS.
22 REMOVE 2 BALL BEARINGS.
23 REMOVE 2 CASING WEARING RINGS.
24 REINSTALL 2 CASING WEARING RINGS.
25 REINSTALL 2 BALL BEARINGS ON SHAFT.
26 REINSTALL 4 BALL BEARING RETAINING NUTS.
27 REINSTALL PUMP HALF COUPLING SHAFT KEY.
28 REINSTALL PUMP HALF COUPLING.
29 TIGHTEN PUMP HALP COUPLING SET SCREW.
30 INSTALL SHAFT, IMPELLER BEARINGS AND COUPLING HALF AS A UNIT.
31 MEASURE AND CUT 10 RINGS OF PACKING.
32 INSTALL 10 RINGS OF PACKING.
33 REINSTALL 2 PACKING GLANDS.
34 REINSTALL 4 PACKING GLAND STUD BOLTS.
35 REINSTALL 4 GLAND NUTS.
36 ADJUST 2 PACKING GLANDS.
37 REINSTALL 6 COUPLING BOLTS.

NT 211 1 UP AND DOWN TO PIT.
2 OPEN AND CLOSE SWITCH.
3 TAG SWITCH AND REMOVE.
4 OPEN SWITCH TO OTHER UNIT AND CLOSE.
5 CLOSE SUCTION VALVE.
6 REMOVE PIPE CAP - TANK DRAIN AND REPLACE.
7 DRAIN 5 GALLON TANK AND FILL.
8 REMOVE 4 BOLTS SUCTION FLANGE AND INSTALL.
9 REMOVE 4 NUTS DISCHARGE FLANGE AND INSTALL.
10 REMOVE 4 BOLTS DISCHARGE FLANGE AND INSTALL.
11 REMOVE 4 MOUNT BOLTS AND INSTALL.
12 SLIDE OUT PUMP AND RETURN.
13 LIFT UNIT AND REPLACE.
14 CLEAN TANK FLANGE.
15 INSTALL GASKET AND BLANK FLANGE AND REMOVE.
16 INSTALL 4 BOLTS AND REMOVE.
17 INSTALL 4 NUTS.
18 OPEN VALVE TO TANK AND CLOSE.
19 CLOSE SWITCH OTHER UNIT AND OPEN.
20 MOVE PUMP UNIT TO TRUCK AND RETURN.
21 DISASSEMBLE AND ASSEMBLE TWO STAGE CENTRIFUGAL PUM
P.

NT 212 1 REMOVE SCREWS FROM IMPELLER RINGS.
2 REMOVE WORN RINGS.
3 INSPECT IMPELLER RINGS.
4 MEASURE IMPELLER RINGS.
5 PRESS ON TWO NEW IMPELLER RINGS.
6 MEASURE MARK AND DRILL 4 HOLES.
7 TAP HOLES FOR SCREWS.
8 INSTALL SCREWS IN RINGS.
9 TURN IMPELLER RINGS TO SIZE ON LATHE.
10 PRESS IMPELLER ON SHAFT.
11 REINSTALL SHAFT SLEEVES.
12 INSTALL CASE RINGS.
13 INSTALL THROAT LINERS.
14 INSTALL WATER SEAL RINGS.
15 INSTALL INSIDE SLINGERS.
16 INSTALL BEARING HOUSINGS.
17 INSTALL SPACER RINGS.
18 PRESS ON TOW BEARINGS.
19 INSTALL LOCK WASHERS.
20 FORCE GREASE INTO COUPLING HALVES.
21 INSTALL GASKET.
22 INSTALL GRID TO COUPLING.
23 PACK GREASE INTO GRID.
24 PLACE GASKET INTO POSITION.
25 INSTALL CASING GASKETS.
26 REINSTALL BOLTS AND NUTS TO CASE.
27 CONNECT COUPLING COVERS.
28 INSTALL CAP SCREWS AND NUTS TO COVER.
29 TIGHTEN CAP SCREWS.
30 CHECK OPERATION BY HAND.
31 OPEN VALVES.
32 TURN SWITCH ON AND OFF.
33 ADJUST GLANDS FOR PROPER "WEEP".
34 TEST RUN PUMP.
35 INSTALL LOCK NUTS.
36 BEND "EARS" TO LOCK NUTS.
37 INSTALL BEARING COVERS AND GASKETS.
38 INSTALL BOLTS TO BEARING COVERS.
39 LOCATE SLINGERS.
40 LOCK SET SCREWS.
41 INSTALL 1/2 COUPLING COVER LOOSE.

42 INSTALL 1/2 COUPLING TO SHAFT.
43 INSTALL LOCK NUT.
44 LOCK SET SCREW.
45 INSTALL ROTATING ELEMENT INTO CASING.
46 LOCATE ALL LOOSE COMPONENTS IN PROPER POSITION.
47 INSTALL BEARING CAPS.
48 INSTALL BOLTS TO CAPS.
49 CHECK IMPELLER FOR CORRECT POSITION.
50 ADJUST IMPELLER.
51 SCRAPE OLD GASKET MATERIAL FROM CASE AND COVER.
52 CUT NEW GASKETS FROM MATERIAL.
53 INSTALL COVER TO CASING.
54 MEASURE AND CUT NEW PACKING.
55 INSTALL PACKING.
56 INSTALL GLANDS.

NT 213 1 DISASSEMBLE COMPLETE FIRE PUMP.
2 REASSEMBLE COMPLETE FIRE PUMP.

NT 214 1 REMOVE OR INSTALL MOTOR UNIT, DISCHARGE CONNECTION , AND 1 SECTION OF PUMP COLUMN.
2 REMOVE NUTS AND BOLTS FROM CLAMP.
3 REMOVE CLAMP SECTIONS FROM CASING.
4 RAISE, POSITION AND RELEASE 3 SECTIONS OF CASING.
5 ATTACH HOLD CLAMPS TO CASING.
6 INSTALL BOLTS AND NUTS TO CLAMPS.
7 REMOVE OR INSTALL 8" CASING.
8 RAISE, POSITION AND RELEASE 8" CASING.
9 REMOVE OR INSTALL SHAFT HOUSING.
10 RAISE, POSITION AND RELEASE SHAFT HOUSING.
11 REMOVE SHAFT OR INSTALL.
12 REMOVE OR INSTALL COUPLINGS.
13 REMOVE OR INSTALL OIL LINE.
14 REMOVE NUTS AND BOLTS FROM CLAMP ON PREVIOUS SECTI ON.
15 REMOVE CLAMP.
16 INSTALL CLAMP TO PUMP SECTION.
17 INSTALL NUTS AND BOLTS TO CLAMP.
18 RAISE, POSITION AND RELEASE PUMP.
19 REMOVE TAIL PIPE FROM PUMP.

NT 215 1 RELEASE TENSION ON BELT DRIVE.
2 REMOVE SANDER BELT FROM PULLEY ASSEMBLY.
3 REMOVE SCREWS HOLDING SHOE COVER RETAINING CLAMP.
4 REMOVE SHOE AND COVER.
5 REPOSITION SHOE AND NEW COVER.
6 POSITION SHOE COVER RETAINING CLAMP.
7 INSERT SCREWS IN SHOE COVER RETAINING CLAMP.
8 REPOSITION SANDER BELT ON PULLEY ASSEMBLY.
9 PUT SANDER BELT UNDER TENSION.

NT 216 1 REMOVE AND INSTALL THROTTLE VALVE PLUG.
2 REMOVE AND INSTALL THROTTLE VALVE SPRING.
3 REMOVE AND INSTALLL THROTTLE VALVE.
4 REMOVE AND INSTALL THROTTLE VALVE TUBE.
5 REMOVE AND INSTALL THROTTLE PUSH PIN.
6 REMOVE AND INSTALL PUSH PIN BUSHING.
7 REMOVE AND INSTALL REDUCING BUSHING.
8 REMOVE AND INSTALL PERMANENT BUSHING.

NT 217 1 REMOVE 3 SCREWS HOLDING COVER PLATE.
2 REMOVE COVER PLATE.
3 REMOVE SCREWS HOLDING 2 TOP LEADS.
4 LOOSEN NUT HOLDING CORD TO BASE OF HANDLE.
5 MOVE CORD SPRING BACK ALONG CONDUIT.
6 PULL SWITCH AND CORD UP THROUGH HANDLE.
7 REMOVE SCREWS HOLDING 2 BOTTOM LEADS.
8 SCREW 2 TOP LEADS TO SWITCH.
9 SCREW 2 BOTTOM LEADS TO SWITCH.
10 POSITION SWITCH UNIT BY PULLING CORD THROUGH HANDL E.
11 MOVE CORD SPRING UP TO BASE OF HANDLE.
12 TIGHTEN NUT HOLDING CORD TO BASE OF HANDLE.
13 PLACE COVER PLATE OVER SWITCH.
14 POSITION SCREWS IN COVER PLATE.
15 TIGHTEN SCREWS.
16 CHECK OPERATION OF SWITCH.

NT 218 1 UNSCREW FITTING ON END OF BARREL.
2 PRY RUBBER PAD FROM BASE OF STUD DRIVER.
3 REMOVE THE SCREWS FROM CIRCULAR RUBBER PLATE.
4 REMOVE COIL SPRING.
5 REMOVE SPRING CLIP.
6 CLEAN BASE PLATE OF STUD DRIVER WITH SOLVENT.
7 INSTALL SPRING KEEPER.
8 POSITION COIL SPRING ON END OF BARREL.
9 POSITION CIRCULAR BASE PLATE OVER BARREL.
10 INSTALL SCREWS IN CIRCULAR BASE PLATE.
11 SPREAD ADHESIVE ON BASE OF DRIVER.
12 POSITON RUBBER PAD ON BASE PLATE.
13 SCREW FITTING ON END OF BARREL.

NT 219 1 REMOVE SCREWS HOLDING SWITCH ASSEMBLY CASE COVER P
LATE.
2 REMOVE COVER PLATE.
3 REMOVE SCREWS HOLDING LEADS TO SWITCH.
4 REMOVE TWO SCREWS HOLDING SWITCH BRACKET TO FRAME.
5 REMOVE NUT HOLDING SWITCH TO BRACKET.
6 REMOVE SWITCH.
7 REPOSITION SWITCH.
8 INSTALL NUT HOLDING SWITCH TO BRACKET.
9 SCREW BRACKET TO FRAME WITH 2 SCREWS.
10 FASTEN LEADS TO SWITCH WITH SCREWS.
11 REPOSITION COVER PLATE.
12 SCREW COVER PLATE ON FRAME.
13 TEST OPERATE SWITCH.

NT 220 1 REMOVE AND INSTALL LOCK SHIELD AND SHIELD EXPANDER
UNIT.
2 REMOVE AND INSTALL LOCK COLLAR.
3 REMOVE AND INSTALL CYLINDER UNIT.
4 REMOVE AND INSTALL PISTON.
5 REMOVE AND INSTALL RING VALVE.
6 REMOVE AND INSTALL RING VALVE LID.
7 CLEAN 6 SMALL PARTS.
8 CLEAN 1 MEDIUM PART.
9 LUBRICATE 6 SMALL PARTS WITH A SWAB.
10 LUBRICATE 1 MEDIUM PART WITH A SWAB.

NT 221 1 REMOVE SCREWS HOLDING COVER PLATE.
2 REMOVE COVER PLATE.
3 REMOVE GASKET.
4 REMOVE SCREW HOLDING CHAIN TENSION SPRING.
5 REMOVE CHAIN TENSION SPRING.
6 REMOVE NUTS HOLDING DRIVE SHAFT PULLEY SPROCKETS.
7 REMOVE SPROCKETS AND CHAIN.
8 CLEAN PARTS IN SOLVENT.
9 CLEAN CHAIN DRIVE CASE.
10 INSTALL SPROCKETS.
11 INSTALL CHAIN.
12 INSTALL NUTS HOLDING SPROCKETS.
13 REPOSITION CHAIN TENSION SPRING.
14 INSTALL SCREW HOLDING CHAIN TENSION SPRING.
15 FILL GEAR CASE WITH GREASE.
16 REPOSITION GASKET.
17 REPOSITION COVER PLATE.
18 INSTALL SCREWS.
19 TEST OPERATE SANDER.

NT 222 1 REMOVE SCREW HOLDING TOP GUARD.
2 REMOVE TOP GUARD HINGE PIN.
3 REMOVE SCREW HOLDING FOOT ASSEMBLY.
4 REMOVE FOOT ASSEMBLY.
5 REMOVE CENTER NUT.
6 REMOVE BLADE.
7 REMOVE INNER RACE.
8 REMOVE UPPER GUARD.
9 REMOVE LOWER GUARD.
10 REMOVE SCREWS HOLDING LOWER GUARD.
11 REMOVE LOWER GUARD AND BEARING ASSEMBLY.
12 REMOVE SPRING.
13 SEPARATE GUARD AND BEARING ASSEMBLY.
14 CLEAN BEARING ASSEMBLY.
15 ASSEMBLE BEARING AND GUARD.
16 POSITION SPRING.
17 POSITION GUARD AND BEARING ASSEMBLY IN HOUSING.
18 ROTATE LOWER GUARD.
19 INSERT SCREWS HOLDING GUARD ASSEMBLY.
20 POSITION BLADE.
21 INSERT CENTER NUT.
22 POSITION TOP GUARD.
23 INSERT HINGE PIN.
24 INSERT SCREW.
25 POSITION FOOT ASSEMBLY.
26 INSERT SCREW HOLDING FOOT ASSEMBLY.
27 CHECK OPERATION OF SAW.

NT 223 1 REMOVE AND INSTALL 8 SCREWS HOLDING OLD BUMPER.
2 POSITION NEW RUBBER BUMPER ON POLISHER BASE.
3 CLAMP BUMPER IN POSITION.
4 DRILL HOLES IN BUMPER AND POLISHER BASE.
5 TAP HOLES IN POLISHER BASE.
6 REMOVE CLAMPS.

NT 224 1 REMOVE SCREWS HOLDING GEAR CASE TO ARMATURE FIELD HOUSING.
2 SEPARATE GEAR CASE AND FIELD HOUSING.
3 REMOVE SCREW HOLDING GREASE PLATE TO ARMATURE FIEL D HOUSING.
4 LOOSEN OTHER SCREW HOLDING GREASE PLATE TO ARMATUR E FIELD HOUSING.
5 ROTATE GREASE PLATE TO ONE SIDE.
6 REMOVE FIBER WASHERS.
7 REMOVE ARMATURE ASSEMBLY FROM HOUSING.
8 REMOVE AND INSTALL BLOWER AND BEARING ON ARMATURE SHAFT WITH ARBOR PRESS.
9 INSERT ARMATURE IN FIELD HOUSING.
10 POSITION GEAR CASE ON FIELD HOUSING.
11 FASTEN GEAR CASE AND ARMATURE FIELD HOUSING TOGETH ER.
12 PLACE FIBER WASHERS ON REAR BEARING.
13 ROTATE GREASE PLATE 180 DEGREES TO COVER REAR BEAR ING.
14 TIGHTEN SCREW ON COVER PLATE.
15 INSTALL SCREW ON OTHER SIDE OF PLATE.
16 TEST OPERATE DRILL.

NT 225 1 REMOVE AND INSTALL 2 DRIVE SCREWS.
2 REMOVE AND INSTALL NAME PLATE.
3 REMOVE AND INSTALL SPRING RETAINING SCREW.
4 REMOVE AND INSTALL THREAD PROTECTOR.
5 REMOVE OR INSTALL PIN.
6 REMOVE OR INSTALL SADDLE.
7 REMOVE OR INSTALL PLUNGER STOP RING.
8 REMOVE OR INSTALL PLUNGER RING.
9 REMOVE OR INSTALL SPRING ADJUSTING SCREW ASSEMBLY.
10 REMOVE OR INSTALL PULL SPRING.
11 REMOVE OR INSTALL PLUNGER CUP RETAINING NUT.
12 REMOVE OR INSTALL SPRING WASHER, SPREADER, 3 PLUNG ER CUPS, 2 CUP SEPARATORS AND 2 DISCS.
13 REMOVE OR INSTALL PLUNGER.
14 CLEAN 18 SMALL PARTS.
15 CLEAN 2 MEDIUM PARTS.
16 LUBRICATE 12 SMALL PARTS.

NT 226 1 REMOVE NUTS FROM TOP CAP ASSEMBLY.
2 REMOVE LOCK WASHERS.
3 PRY OFF TOP CAP ASSEMBLY.
4 REMOVE GASKET.
5 REMOVE GOVERNOR ASSEMBLY UNIT.
6 UNSCREW GOVERNOR BEARING BUSHING.
7 REMOVE BEARING RETAINER NUT.
8 REMOVE NUTS FROM LOWER GEAR HOUSING.
9 REMOVE LOCK WASHERS FROM STUDS.
10 REMOVE LONG BOLTS FROM GEAR HOUSING.
11 REMOVE LOCK WASHERS FROM BOLTS.
12 REMOVE GEAR HOUSING FROM BODY OF DRILL.
13 REMOVE SLEEVE PIN.
14 REMOVE SLEEVE, ROTOR, KEY AND PLATES.
15 REMOVE BLADES FROM ROTOR.
16 REMOVE BEARINGS FROM ROTOR.
17 REMOVE SPINDLE PACKING NUT.
18 REMOVE OIL PACKING.
19 REMOVE GEAR AND BEARING ASSEMBLY.
20 TAP OUT SPINDLE AND GEAR ASSEMBLY.
21 REMOVE BEARINGS FROM GEAR HOUSING.
22 REMOVE BEARINGS FROM SPINDLE.
23 REMOVE BEARINGS FROM INTERMEDIATE GEAR SHAFT.
24 CLEAN PARTS.
25 OIL PARTS.

NT 227 1 REMOVE AND INSTALL OIL DRAIN PLUG.
2 DRAIL OIL.
3 REMOVE AND INSTALL COTTER PIN.
4 REMOVE AND INSTALL PIN.
5 REMOVE AND INSTALL LEVER HANDLE.
6 REMOVE AND INSTALL PACKING NUT.
7 REMOVE PACKING RINGS AND INSTALL.
8 REMOVE AND INSTALL CUP RING.
9 REMOVE AND INSTALL CUPS.
10 REMOVE AND INSTALL SPREADER RING.
11 REMOVE AND INSTALL VALVE RETAINING NUT (VALVE ASSE MBLY).
12 REMOVE AND INSTALL VALVE PLUG.
13 REMOVE AND INSTALL WASHER 2 SPRING VALVE BALL.
14 REMOVE AND INSTALL BASE.
15 CLEAN PARTS.
16 OIL PARTS.
17 FILL RESERVOIR WITH HYDRAULIC OIL.
18 CHECK OPERATION AFTER ASSEMBLY.
19 REMOVE AND INSTALL FLEXIBLE HOSE.

20 CONNECT AND DISCONNECT TO HYDRAULIC RAM.

NT 228 1 MATERIAL HANDLING.
2 USE ARBOR PRESS TO INSTALL BEARINGS.
3 INSTALL BEARINGS IN GEAR HOUSING.
4 INSTALL ASSEMBLED GEAR SHAFTS INTO GEAR HOUSING.
5 INSTALL NEEDLE BEARING IN HOUSING.
6 INSTALL SPINDLE ASSEMBLY.
7 INSTALL OIL PACKING.
8 INSTALL SPINDLE PACKING NUT.
9 INSTALL BLADES TO ROTOR.
10 ASSEMBLE ROTOR IN SLEEVE.
11 INSTALL ROTOR ASSEMBLY.
12 INSTALL KEY.
13 INSTALL BOTTOM AND TOP PLATE.
14 INSTALL SLEEVE PIN.
15 ASSEMBLE GEAR HOUSING ASSEMBLY TO BODY OF DRILL.
16 INSTALL THROUGH BOLTS.
17 INSTALL LOCK WASHERS.
18 INSTALL AND TIGHTEN NUTS.
19 INSTALL LOCK WASHERS ON STUDS.
20 INSTALL AND TIGHTEN NUTS ON STUDS.
21 INSTALL AND TIGHTEN BEARING RETAINER NUT.
22 INSTALL AND TIGHTEN GOVERNOR BUSHING.
23 ASSEMBLE GOVERNOR ASSEMBLY.
24 INSTALL GOVERNOR ASSEMBLY.
25 INSTALL GASKET.
26 INSTALL TOP CAP ASSEMBLY.
27 INSTALL LOCK WASHERS.
28 INSTALL AND TIGHTEN NUTS.
29 CHECK OPERATION AFTER REPAIR.

NT 229 1 REMOVE AND INSTALL ARMATURE ON PORTABLE ELECTRIC D
RILL. USE ARBOR PRESS.

NT 230 1 REMOVE NUTS FROM GUARD SCREWS.
2 REMOVE SCREWS AND LOCKWASHERS.
3 REMOVE 2 GUARD PIECES.
4 REMOVE NUT FROM SPINDLE.
5 REMOVE PLATE WASHER.
6 REMOVE ABRASIVE WHEEL.
7 REMOVE BACK UP WASHER.
8 REMOVE BEARING HOUSING FRONT.
9 REMOVE LONG BODY SCREWS.
10 TAP SPINDLE HOUSING LOOSE FROM BODY OF GRINDER.
11 TAP HANDLE AND VALVE SECTION OFF FROM BODY.
12 TAP SPINDLE THROUGH HOUSING PUSHING BEARINGS FREE
OF HOUSING.
13 COLLECT SPACER RING.
14 UNSCREW GOVERNOR FROM ROTOR NUT AND REMOVE.
15 REMOVE ROTOR NUT.
16 REMOVE SPACER RING.
17 REMOVE ROTOR AND BEARINGS ASSEMBLY.
18 USE ARBOR PRESS TO REMOVE AND ASSEMBLE 4 BEARINGS.
19 DISASSEMBLE ROTOR BLADES.
20 CLEAN PARTS.
21 INSTALL ROTOR BLADES TO ROTOR.
22 INSTALL ROTOR ASSEMBLY IN HOUSING.
23 INSTALL SPACE WASHER.
24 INSTALL SPINDLE ASSEMBLY.
25 INSTALL SPINDLE HOUSING TO BODY.
26 INSTALL HANDLE TO BODY.
27 INSTALL SCREWS AND TIGHTEN.
28 INSTALL WHEEL SPACER.
29 INSTALL NEW WHEEL.
30 INSTALL WHEEL PLATE WASHER.

31 INSTALL NUT.
32 INSTALL GUARD.
33 INSTALL SCREWS AND LOCKWASHERS.
34 INSTALL NUTS AND TIGHTEN.
35 INSTALL MOTOR NUT.
36 INSTALL GOVERNOR ASSEMBLY.
37 INSTALL SPACER WASHER.

NT 231 1 REMOVE AND INSTALL DRIVE CHAIN FOR PORTABLE BELT S
ANDER. CLEAN PARTS, CHAIN, AND FILL GEAR CASE WIT

NT 232 1 DISASSEMBLE AND ASEMBLE, THROTTLE VALVE ASSEMBLY O
F RING VALVE CHIPPING HAMMER, TO REPLACE WORN PART
2 DISASSMBLE AND ASSEMBLE RING VALVE CHIPPING HAMMER
TO REPLACE RING VALVE AND RING VALVE LID. INCLUDE

NT 233 1 REMOVE AND INSTALL GUARDS FOR PORTABLE ROTARY HAND
SAW. REMOVE AND INSTALL FOOT ASSEMBLY, SAW BLADE

NT 234 1 DISASSEMBLE HEAVY DUTY PNEUMATIC DRILL. CLEAN AND
OIL PARTS.
2 ASSEMBLE HEAVY DUTY PNEUMATIC DRILL, AFTER REPLACI
NG BEARINGS AND SPINDLE. USE ARBOR PRESS TO INSTA

NT 235 1 DISASSEMBLE AND ASSEMBLE HYDRAULIC RAM, TO REPLACE
PLUNGER CUPS IN PORTABLE 10 TON CAPACITY JACK. RE

NT 236 1 DISASSEMBLE AND ASSEMBLE 8" PORTABLE AIR GRINDER F
OR REPLACEMENT OF BEARINGS. REMOVE AND INSTALL GU

NT 237 1 REMOVE AND INSTALL ARMATURE ON PORTABLE ELECTRIC D
RILL. REMOVE AND INSTALL GEAR CASE AND ARMATURE A

NT 238 1 DISASSEMBLE AND ASSEMBLE 10 TON HYDRAULIC RAM JACK
TO REPLACE PLUNGER CUPS. CLEAN AND OIL PARTS.
2 DISASSEMBLE AND ASSEMBLE, PORTABLE HYDRAULIC PUMPS
USED WITH HYDRAULIC JACK OR RAM. DRAIN AND FILL

NT 239 1 DISASSEMBLE AND ASSEMBLE HEAVY DUTY PNEUMATIC DRIL
L TO INSTALL NEW BEARINGS. REMOVE AND INSTALL GOVE

NT 240 1 DISASSEMBLE AND ASSEMBLE 8" PORTABLE AIR GRINDER F
OR REPLACEMENT OF BEARINGS. REMOVE AND INSTALL GU

NT 241 1 REMOVE COTTER KEY FROM END OF FEED SPINDLE.
2 REMOVE CASTELLATED NUT.
3 REMOVE FEED SCREW WASHER.
4 REMOVE FITTING WASHER.
5 REMOVE THRUST BEARING.
6 REMOVE BEARING SLEEVE.
7 REMOVE RADIAL BEARING.
8 REMOVE RETAINING RING.
9 REMOVE WORM GEAR.
10 REMOVE KEY.

NT 242 1 LOOSEN OR TIGHTEN GUARD THUMB SCREWS.
2 REMOVE OR REINSTALL GRINDING WHEEL GUARD COVER.
3 REMOVE OR REINSTALL GRINDING WHEEL.
4 LOOSEN OR TIGHTEN CLAMP SCREWS.
5 REMOVE OR REINSTALL WHEEL GUARD.
6 REMOVE OR REINSTALL SCREWS IN FLANGE.
7 REMOVE OR REINSTALL SPINDLE UNIT.
8 MATERIAL HANDLING TO RETURN OR TO RECEIVE FROM MAN
UFACTURER FOR RECONDITIONING.

NT 243 1 BACK OFF SET SCREW IN HAND WHEEL OR TIGHTEN.
2 REMOVE OR REINSTALL CROSS FEED HAND WHEEL.
3 REMOVE OR REINSTALL DIAL.
4 REMOVE OR REINSTALL KEY.
5 PRY TANG OF LOCK WASHER TO DISENGAGE ADJUSTING NUT OR BEND IN PLACE TO ENGAGE.
6 REMOVE OR REINSTALL CROSS FEEL SCREW.
7 REMOVE OR REINSTALL BEARING.

NT 244 1 REMOVE OR REINSTALL BOLT.
2 DROP OR REINSTALL SHAFT GUARD.
3 REMOVE OR REINSTALL SPRING LOCK RINGS.
4 REMOVE OR REINSTALL SPLINE SHAFT.
5 REMOVE OR REINSTALL CAP SCREWS.
6 REMOVE OR REINSTALL DOWEL PINS.
7 REMOVE GEAR BOX FROM MACHINE.

NT 245 1 REMOVE OR INSTALL 1/2" HEX NUTS.
2 DISENGAGE OR ENGAGE LEVER.
3 REMOVE OR INSTALL TABLE.
4 REMOVE OR INSTALL TAPER PIN.
5 REMOVE OR INSTALL 5 SCREWS.
6 REMOVE OR INSTALL TABLE SLIDE.
7 LOOSEN OR TIGHTEN 4 TEE BOLTS.
8 REMOVE OR INSTALL ADDITIONAL ATTACHMENTS, SUCH AS CHUCK AND TAIL STOCK FROM TABLE.

NT 246 1 LOOSEN SCREWS ON HOSE CLAMPS.
2 SLIDE HOSES OFF CONNECTIONS.
3 REMOVE CAP SCREWS.
4 REMOVE WASHERS.
5 REMOVE COLUMN WATER GUARD.
6 REMOVE TRIP BUTTON SCREW.
7 RUN HEAD UP TO EXTREME POSITION OF FEED SCREW. AVE RAGE POSITION - 3" TO END OF SCREW.
8 REMOVE HEAD 1900.

NT 247 1 LOWER OR LIFT THE WHEEL HEAD TO ITS LOWEST POSITIO N.
2 LOOSEN OR TIGHTEN 2 HEX HEAD SCREWS.
3 REMOVE OR INSTALL BELT.
4 INSTALL OR REMOVE BLOCKS TO BLOCK UP MOTOR.
5 REMOVE OR INSTALL 2 HEX SCREW SCREWS.
6 REMOVE OR INSTALL MOTOR.
7 LOOSEN OR TIGHTEN WHEEL HEAD CLAMPING SCREW.
8 REMOVE OR INSTALL UNIT FROM MACHINE.
9 CLEAN GRINDING WHEEL HEAD AND COLUMN.

NT 248 1 REMOVE AND INSTALL CROSS FEED SCREW AND SADDLE.
2 REMOVE AND INSTALL LOCK SCREW.
3 REMOVE AND INSTALL DOG POINT SET SCREW.
4 REMOVE AND INSTALL CROSS SCREW NUT.
5 CLEAN SMALL EASY PARTS.
6 CLEAN LARGE EASY PARTS.

NT 249 1 REINSTALL HEAD 1900#.
2 ENGAGE FEED SCREW, AVERAGE ADJUSTMENT.
3 REINSTALL TAPER GIBS.
4 MAKE APPROXIMATE ADJUSTMENT.
5 CHECK OPERATION.
6 MAKE FINAL ADJUSTMENT.
7 REINSTALL TRIP BUTTON SCREW.
8 REINSTALL WATER GUARD.
9 REINSTALL WASHERS.
10 REINSTALL HOSES.
11 TIGHTEN HOSE CLAMPS.
12 CHECK OPERATION AFTER REPAIR.

NT 250 1 REMOVE OR INSTALL TABLE AND TABLE SLIDE.
2 REMOVE OR INSTALL CROSS FEED SCREW AND SADDLE.
3 CLEAN TABLE AND SLIDE.
4 OIL CROSS FEED SCREW.
5 OIL TABLE WAYS AND SADDLE WAYS.

NT 251 1 REMOVE HEAD UNIT FROM COLUMN.
2 REMOVE UPPER GEAR BOX.
3 REMOVE COVER FROM FEED SCREW.
4 REMOVE GUARD FROM FEED SCREW.
5 REMOVE CAP SCREWS.
6 UNSCREW FEED SCREW NUT.
7 REMOVE COTTER PIN.
8 REMOVE CASTELLATED NUT.
9 REMOVE WASHER.
10 REMOVE GEAR FROM WORM DRIVE.
11 REMOVE CAP SCREWS FROM CAP.
12 REMOVE CAP.
13 REMOVE CUP BEARING.
14 REMOVE WASHER FROM OIL CASE.
15 REMOVE SCREWS FROM OIL CASE.
16 REMOVE OIL CASE.
17 REMOVE SET SCREW FROM LOCKING RING.
18 REMOVE LOCKING BLOCK.
19 UNSCREW RETAINING RING.
20 LIFT FEED SCREW ASSEMBLY CLEAR OF MACHINE.

NT 252 1 LOWER AND LIFT THE WHEEL HEAD TO ITS LOWEST POSITI
ON.
2 LOOSEN AND TIGHTEN 2 HEX SCREWS.
3 REMOVE AND REINSTALL BELT.
4 INSTALL AND REMOVE BLOCKS TO BLOCK UP MOTOR.
5 REMOVE AND INSTALL 2 HEX SCREWS.
6 REMOVE AND INSTALL MOTOR.
7 LOOSEN AND TIGHTEN WHEEL HEAD CLAMPING SCREW.
8 REMOVE AND INSTALL UNITS.
9 REMOVE AND INSTALL INSTRUCTION PLATE BY REMOVING F
OUR SCREWS.
10 LOOSEN AND TIGHTEN CLAMPING TWO SCREWS.
11 LOOSEN AND TIGHTEN CLAMPING SCREWS.
12 TIGHTEN AND LOOSEN JACK SCREWS (2).
13 REMOVE AND INSTALL SPINDLE UNIT.
14 CLEAN PARTS HEAVY DIFFICULT.

NT 253 1 REMOVE HEAD UNIT FROM COLUMN.
2 DRAIN OIL FROM UPPER BEARING.
3 REMOVE BOLTS FROM AIR INLET HORN.
4 REMOVE HORN.
5 REMOVE SPINDLE BOLT.
6 REMOVE FAN WASHER.
7 REMOVE FAN.
8 REMOVE BEARING COVER SCREWS.
9 REMOVE BEARING COVER.
10 REMOVE BEARING BOLTS.
11 PULL BEARING HOUSING.
12 REMOVE UPPER BEARING FROM SPINDLE.
13 BLOCK UP FACE PLATE.
14 REMOVE NUT ON FACE PLATE.
15 REMOVE BOLTS FROM LOWER BEARING CASE.
16 LOOSEN GREASE SLINGER RING.
17 REMOVE FACE PLATE.
18 REMOVE CASE.
19 REMOVE THRUST BEARING.
20 REMOVE SLINGER.
21 PULL SPINDLE AND ROTOR.
22 DRIVE LOWER BEARING.
23 REMOVE DUST RING.
24 REMOVE BOLTS FROM LOWER BUSHING.
25 REMOVE BUSHING.
26 REMOVE THRUST SPRINGS.

NT 254 1 ASSEMBLE FEED RANGE DIAL.
2 POSITION PLUNGER AND SPRING.
3 LOOSE ASSEMBLE DETENT SCREW.
4 POSITION FEED ADJUSTING RACK COLLAR.
5 ASSEMBLE FEED ADJUSTING RACK TO COLLAR.
6 ASSEMBLE NUT TO RACK.
7 ADJUST PINION AND RACK.
8 TIGHTEN DETENT SCREW.
9 ASSEMBLE PLUG.
10 ASSEMBLE BAR AND SHAFT.
11 ASSEMBLE COUPLING SLEEVE.
12 ASSEMBLE DOWEL PIN.
13 ASSEMBLE SET SCREW.
14 ASSEMBLE HOLLOW SHAFT.
15 ASSEMBLE LOCK RING.
16 ASSEMBLE THRUST RING.
17 ASSEMBLE BEARING.
18 ASSEMBLE NUT.
19 ASSEMBLE HANDWHEEL SHAFT.
20 ASSEMBLE SHAFT (WORM GEAR).
21 ASSEMBLE WORM GEAR AND KEY.
22 ASSEMBLE WASHER.
23 ASSEMBLE NUT.
24 ASSEMBLE WORM SHAFT ASSEMBLY.
25 ASSEMBLE SET SCREW.
26 ASSEMBLE RING GEAR.
27 TIGHTEN SET SCREW.
28 ASSEMBLE DIAL.
29 ASSEMBLE CLAMP NUT.
30 ASSEMBLE DIAL RETAINING CAP.
31 ASSEMBLE CAP SCREWS.
32 ASSEMBLE H.W. KEY SLEEVE.
33 ASSEMBLE DOWEL PIN.
34 ASSEMBLE HANDWHEEL.
35 ASSEMBLE HANDWHEEL SCREW.
36 ASSEMBLE OUTPUT SHAFT ASSEMBLY.
37 ASSEMBLE SET SCREW.

38 ASSEMBLE IDLER GEAR ASSEMBLY.
39 ASSEMBLE CAP SCREW.
40 ASSEMBLE SPRING AND FRICTION PLUG.
41 ASSEMBLE IDLER GEAR ASSEMBLY.
42 ASSEMBLE CAP SCREW.
43 ASSEMBLE PIPE PLUG.
44 ASSEMBLE PAWL ARM AND TRIP ARM.
45 ASSEMBLE PAWL AND ECC LINK.
46 ASSEMBLE STUD.
47 ASSEMBLE DOWEL PIN.
48 ASSEMBLE RATCHET PINION.
49 ASSEMBLE PLATE WASHER.
50 ASSEMBLE CAP SCREW.
51 ASSEMBLE CAP SCREWS.
52 ASSEMBLE SPACERS.
53 ASSEMBLE BRIDGE.
54 ASSEMBLE CAP SCREWS.
55 ADJUST BRIDGE.
56 ADJUST FEED - PAWL AND RATCHET PINION - TRIP ARM-
FEED ADJUSTING RACK.

NT 255 1 REINSTALL FEED SCREW ASSEMBLY.
2 SCREW RETAINING RING IN PLACE.
3 REINSTALL LOCKING BLOCK.
4 REINSTALL SET SCREW TO LOCKING RING.
5 REINSTALL OIL CASE.
6 REINSTALL SCREWS TO OIL CASE.
7 REINSTALL WASHER TO OIL CASE.
8 REINSTALL CUP BEARING.
9 REINSTALL CAP.
10 REINSTALL CAP SCREWS.
11 REINSTALL GEAR TO WORM DRIVE.
12 REINSTALL WASHER.
13 REINSTALL CASTELLATED NUT.
14 REINSTALL COTTER PIN.
15 RESCREW FEED NUT.
16 REINSTALL CAP SCREWS.
17 REINSTALL GUARD TO FEED SCREW.
18 REINSTALL COVER TO FEED SCREW.
19 REINSTALL UPPER GEAR BOX.
20 REINSTALL HEAD TO COLUMN.
21 CHECK OPERATION OF FEED SCREW.

NT 256 1 CLEAN BEARINGS, SPRINGS AND SLINGERS, ETC.
2 CLEAN HOUSING, ETC.
3 CLEAN ROTOR.
4 INSERT WOODRUFF KEY IN SPINDLE.
5 INSTALL DUST GUARD.
6 INSTALL BEARING TO SHAFT.
7 INSTALL LOWER BEARING HOUSING.
8 INSTALL THRUST BEARING.
9 INSTALL GREASE SLINGER.
10 TIGHTEN LOCK SCREW.
11 SPREAD GREASE ON GASKET.
12 INSTALL GASKET.
13 INSTALL LOWER GREASE CASE.
14 INSTALL CAP SCREWS.
15 INSTALL FACE PLATE.
16 INSTALL FACE PLATE NUT.
17 FILL UPPER BEARINGS WITH OIL.
18 INSTALL CAP SCREWS.
19 INSTALL SPRINGS.
20 SET UP HEAD HOUSING AND LOWER ROTOR SPINDLE INTO P
LACE.
21 INSTALL UPPER BEARING HOUSING.
22 INSTALL SCREWS TO HOUSING.
23 INSTALL WOODRUFF KEY.
24 INSTALL UPPER BEARING RETAINER.
25 INSTALL SPLASH VANE.
26 INSTALL UPPER BEARING.
27 INSTALL BEARING COVER.
28 INSTALL SCREWS.
29 INSTALL FAN.
30 INSTALL WASHERS.
31 INSTALL BOLT.
32 INSTALL AIR INLET HORN.
33 INSTALL CAP SCREWS.

NT 257 1 REMOVE AND INSTALL SLIDING TABLE.
2 REMOVE AND INSTALL OIL ROLLERS.
3 REMOVE AND INSTALL OIL ROLLER SPRINGS.
4 REMOVE AND INSTALL SCREWS FOR VERTICAL GUIDE.
5 REMOVE AND INSTALL VERTICAL GUIDE ON DUSTGUARD.
6 REMOVE AND INSTALL BOLTS FRONT DUST GUARD.
7 REMOVE AND INSTALL FRONT DUST GUARD.
8 MOVE CARRIAGE AS FAR AS POSSIBLE TO REAR TO REMOVE ; TO FRONT TO INSTALL.
9 SLIDE CARRIAGE TO REMOVE AND INSTALL.
10 STRAIGHTEN AND BEND LUGS ON PINION LOCK WASHER.
11 REMOVE AND INSTALL NUT ON SHAFT.
12 REMOVE AND INSTALL NUT ON TABLE HANDWHEEL.
13 REMOVE AND INSTALL TABLE HANDWHEEL.
14 REMOVE AND INSTALL SCREWS FROM PLATE DIAL.
15 REMOVE AND INSTALL DIAL PLATE.
16 REMOVE AND INSTALL LOCK PIN SCREW.
17 REMOVE AND INSTALL CROSS-FEED LOCK SCREW.
18 REMOVE AND INSTALL RACK PINION SHAFT AND FRONT END ASSEMBLY.
19 REMOVE AND INSTALL RACK PINION PARTS.
20 REMOVE AND INSTALL RATCHET WHEEL LEVER SCREWS.
21 LOOSEN AND TIGHTEN CROSS FEED HANDWHEEL SCREW.
22 REMOVE AND INSTALL CROSS FEED NUT.
23 REMOVE AND INSTALL LOCKWASHER.
24 REMOVE AND INSTALL HANDWHEEL.
25 REMOVE AND INSTALL RATCHET WHEEL LEVER NUT.
26 REMOVE AND INSTALL RATCHET WHEEL LEVER AND THRUST BEARING.
27 REMOVE AND INSTALL GUARD BOLTS.
28 REMOVE AND INSTALL GUARD.
29 REMOVE AND INSTALL RATCHET WHEEL LEVER SLEEVE.
30 REMOVE AND INSTALL CROSS FEED BUSHING SCREWS.
31 REMOVE AND INSTALL BUSHING.
32 REMOVE AND INSTALL CROSS FEED SHAFT.
33 MOVE CARRIAGE TO REMOVE OR INSTALL.
34 LOOSEN AND TIGHTEN CROSS-FEED GUARD.
35 REMOVE AND INSTALL CARRIAGE.
36 CLEAN PARTS - SMALL.
37 CLEAN PARTS - LARGE.
38 OIL PARTS.
39 CHECK OPERATION OF CARRIAGE.

NT 258 1 REMOVE AND INSTALL HEAD AND COLUMN.
2 REMOVE AND INSTALL SPINDLE.

NT 259 1 REMOVE AND INSTALL 4 SCREWS.
2 REMOVE AND INSTALL 2 SCREWS.
3 LOOSEN AND TIGHTEN 2 CLAMPING SCREWS.
4 TIGHTEN AND LOOSEN 2 JACK SCREWS.
5 ADJUST SPINDLE.
6 REMOVE AND INSTALL BELT.
7 CLEAN PARTS (BELT INSTALLATION).
8 REMOVE AND INSTALL TABLE SLIDE, CROSS FEED SCREW A ND SADDLE (CLEAN AND OIL WAYS).
9 REMOVE AND INSTALL SPINDLE UNIT (INCLUDING CLEAN S PINDLE).

NT 260 1 REMOVE AND INSTALL UPPER GEAR BOX TO MACHINE (DISA SSEMBLE UPPER GEAR BOX).
2 REMOVE CAP SCREWS.
3 REMOVE SPACERS.
4 REMOVE CAP SCREWS.
5 REMOVE BRIDGE.
6 REMOVE CAP SCREW.
7 REMOVE PLATE WASHER.
8 REMOVE RATCHET PINION.
9 REMOVE DOWEL PIN.
10 REMOVE STUD.
11 REMOVE PAWL AND ECC. LINK.
12 REMOVE PAWL ARM AND TRIP ARM.
13 REMOVE PIPE PLUG.
14 REMOVE CAP SCREW.
15 REMOVE IDLER GEAR ASSEMBLY.
16 REMOVE FRICTION PLUG.
17 REMOVE SPRING.
18 REMOVE CAP SCREW.
19 REMOVE SECOND IDLER GEAR ASSEMBLY.
20 REMOVE SET SCREW.
21 REMOVE OUTPUT SHAFT ASSEMBLY.
22 REMOVE HANDWHEEL SCREW.
23 REMOVE HANDWHEEL.
24 REMOVE DOWEL PIN.
25 REMOVE KEY SLEEVE.
26 REMOVE CAP SCREWS.
27 REMOVE DIAL RETAINING CAP.
28 LOOSEN CLAMP NUT.
29 LOOSEN RESET CLAMP.
30 REMOVE DIAL.
31 LOOSEN SET SCREW ON RING GEAR.
32 REMOVE RING GEAR.
33 REMOVE SET SCREW FROM WORM SHAFT.
34 REMOVE WORM SHAFT ASSEMBLY.
35 REMOVE CHECK NUT.
36 REMOVE WASHER.
37 REMOVE KEY.
38 REMOVE WORM GEAR.
39 REMOVE SHAFT.
40 REMOVE HANDWHEEL SHAFT.
41 REMOVE LOCK SPRING.
42 REMOVE SET SCREW.
43 REMOVE NUT.
44 DRIVE OUT SHAFT.
45 COLLECT LOOSE PARTS.
46 REMOVE DOWEL PIN.
47 REMOVE COUPLING SLEEVE.
48 REMOVE SET SCREW.
49 REMOVE FEED CONTROL SHAFT.
50 REMOVE OPERATING BAR.
51 REMOVE DETENT SCREW.
52 REMOVE SPRING.
53 REMOVE PLUNGER.
54 REMOVE FEED DIAL.
55 REMOVE FEED ADJUSTING RACK.
56 REMOVE NUT FROM ADJUSTING RACK.
57 REMOVE PLUG.
58 REMOVE COLLAR.
59 CLEAN GEAR BOX.
60 CLEAN INSIDE SURFACES OF BOX.
61 DRAIN OIL.
62 ASSEMBLE UPPER GEAR BOX (INCLUDING FEED ADJUSTMENT).

NT 261 1 REMOVE FEED SCREW ASSEMBLY, INCLUDING HEAD UNIT FROM COLUMN.
2 DISASSEMBLE FEED SCREW ASSEMBLY (ASSSEMBLE FEED SCREW ASSEMBLY).
3 CLEAN SMALL PARTS.
4 CLEAN FEED SCREW.
5 OIL PARTS.
6 INSTALL KEY.
7 INSTALL WORM GEAR.
8 INSTALL RETAINING RING.
9 INSTALL RADIAL BEARING.
10 INSTALL BEARING SLEEVE.
11 INSTALL THRUST BEARING.
12 INSTALL WASHERS.
13 INSTALL NUT.
14 INSTALL COTTER PIN.
15 ADJUST PARTS DURING ASSEMBLY.
16 INSTALL FEED SCREW ASSEMBLY (INCLUDING REPLACE HEAD UNIT ON COLUMN).

NT 262 1 REMOVE HEAD UNIT FROM COLUMN AND DISASSEMBLE HEAD.
2 ASSEMBLE HEAD UNIT.
3 INSTALL HEAD UNIT ON COLUMN.

NT 263 1 REMOVE OR REINSTALL HEX NUTS.
2 REMOVE OR REINSTALL HEX HEAD BOLTS AND LOCKWASHERS.
3 REMOVE OR REINSTALL SOLENOID, AND END SHIELD ASSEMBLY.
4 REMOVE OR REINSTALL DISC MOTOR BRAKE SPIDER.
5 REMOVE OR REINSTALL COTTER PIN.
6 REMOVE OR REINSTALL SPLINED DISC BRAKE WHEELS.

NT 264 1 REMOVE CAP SCREWS.
2 REMOVE LOCK WASHERS.
3 REMOVE SHAFT END HOUSING.
4 REMOVE BEARING LOCK RING.
5 REMOVE ROLLER BEARING.
6 REMOVE CAP SCREWS.
7 REMOVE LOCK WASHERS.
8 REMOVE MOTOR END BELL.
9 REMOVE REAR BEARING PLATE.
10 REMOVE ROTOR SHAFT AND ROTOR.

NT 265 1 REMOVE OR REINSTALL CAP SCREWS.
2 REMOVE OR REINSTALL LOCK WASHERS.
3 REMOVE OR REINSTALL MOTOR ASSEMBLY FROM HOIST UNIT.

NT 266 1 REMOVE OR REINSTALL HEX NUTS.
2 REMOVE OR REINSTALL BOLTS AND LOCK WASHERS.
3 REMOVE OR REINSTALL COMPLETE GEAR AND LEAD BRAKE C
ASE AND ASSEMBLY FROM DRUM ASSEMBLY.

NT 267 1 REMOVE CAP SCREWS.
2 REMOVE LOCKWASHERS.
3 REMOVE RETAINER.
4 REMOVE THRUST ROLLER RING.
5 REMOVE SPLINED COUPLING.
6 REMOVE OIL SEALS.
7 REMOVE ROLLER BEARINGS.
8 REMOVE NUTS.
9 REMOVE BOLTS AND LOCKWASHER.
10 REMOVE ROPE GUARDS.
11 REMOVE DRUM COVER.
12 REMOVE DRUM END COVER.
13 REMOVE DRUM SHAFT.

NT 268 1 REINSTALL REAR BEARING PLATE ON SHAFT.
2 REINSTALL ROLLER BEARING ON SHAFT.
3 REINSTALL BEARING LOCKRING ON SHAFT.
4 REINSTALL MOTOR END BELL ON SHAFT.
5 REINSTALL SHAFT END HOUSING TO END BELL.
6 INSERT CAP SCREWS AND 4 LOCK WASHERS.
7 TIGHTEN CAP SCREWS.
8 REINSTALL MOTOR END BELL TO MOTOR FRAME.
9 INSERT CAP SCREWS AND LOCKWASHERS.
10 TIGHTEN CAP SCREWS.
11 CLEAN SMALL PARTS.
12 CLEAN MEDIUM PARTS.
13 INSPECT PARTS.
14 INSPECT PARTS.

NT 269 1 DISASSEMBLE ELECTRIC MOTOR FOR 6000 LB. CAPACITY C
ABLE HOIST. MOTOR ALREADY REMOVED FROM HOIST.
2 REASSEMBLE ELECTRIC MOTOR FOR 6000 LB. CAPACITY CA
BLE HOIST. REINSTALL MOTOR TO HOIST NOT INCLUDED.

NT 270 1 CLIMB TO AND FROM HOIST ON LADDER.
2 RIG AND REMOVE CHAIN HOIST, LOWER AND RAISE LOAD.
3 REMOVE NUTS AND INSTALL.
4 REMOVE BOLTS AND INSTALL.

NT 271 1 LIFT AXLE FROM FLOOR TO BENCH WITH FORKLIFT.
2 REMOVE WHEEL HUB COVERS WITH PLIERS.
3 REMOVE FOUR BOLTS FROM EACH WHEEL.
4 REMOVE COTTER PIN FROM EACH WHEEL.
5 REMOVE BEARING FROM EACH WHEEL.
6 REMOVE WHEELS.
7 REMOVE AXLE SWIVEL COVERS WITH HAMMER AND CHISEL.
8 REMOVE TWO SET SCREWS FROM EACH AXLE SWIVEL.
9 WIPE EXCESS GREASE FROM AXLES.
10 TURN AXLE OVER ON WORKBENCH.
11 REMOVE COTTER PINS FROM AXLE PIVOT PINS.
12 REMOVE NUT FROM EACH PIVOT PIN.
13 REMOVE FIVE 1/2 INCH BOLTS HOLDING HUB COVER WITH
RATCHET AND SOCKET.
14 REMOVE SPLIT FITTING WITH WEDGE AND PRYBAR.
15 REMOVE HUB COVER FROM TOP OF AXLE CASTING.
16 REMOVE PIVOT PINS.
17 REMOVE PIVOT ASSEMBLY FROM INSIDE OF AXLE CASTING.
18 REMOVE NUTS AND BOLTS OF PIVOT ASSEMBLY AT BENCH.
19 REMOVE ARMS FROM PIVOT ASSEMBLY.

20 DRIVE OUT TWO SMALL PIVOT PINS WITH HAMMER AND PUN
CH.
21 DRIVE OUT FOUR BUSHINGS WITH HAMMER AND STEP PIN.
22 GET MATERIAL FOR NEW PIVOT PINS.
23 SAW MATERIAL TO LENGTH FOR TWO PIVOT PINS.
24 SET UP ENGINE LATHE TO MANUFACTURE PINS.
25 HANDLING TIME FOR PINS AT ENGINE LATHE.
26 MANUFACTURE TWO PIVOT PINS.
27 MEASURE HOLE DIAMETER IN CASTING FOR NEW BUSHINGS
AND RECORD.
28 MANUFACTURE BRONZE BUSHINGS ON ENGINE LATHE.
29 INSTALL NEW BUSHINGS WITH BENCH PRESS.
30 REAM BUSHINGS TO FINAL SIZE.
31 ASSEMBLE AXLES FOR TRIAL FIT.
32 MANUFACTURE SPACERS FOR AXLE ASSEMBLIES.
33 GREASE AXLES BY HAND.
34 DRILL PIVOT PINS FOR SET SCREWS.
35 TAP PIVOT PINS FOR SET SCREWS.
36 REMOVE TWO BUSHINGS FROM HUB COVER.
37 MANUFACTURE TWO BRONZE BUSHINGS FOR HUB COVER.
38 INSTALL BUSHINGS IN HUB COVER.
39 REAM TWO BUSHINGS TO FINAL SIZE.
40 INSTALL SET SCREWS IN PIVOT PINS.
41 ASSEMBLE AXLES WITH SPACERS AND BEARINGS.
42 ASSEMBLE PIVOT ASSEMBLY AND ARMS.
43 INSTALL AND TIGHTEN PIVOT ASSEMBLY NUTS AND BOLTS.
44 INSTALL HUB COVER TO CASTING.
45 INSTALL FIVE BOLTS TO HUB COVER AND TIGHTEN.
46 CHECK PIVOT OPERATION AND CLEARANCES.
47 MEASURE HOLE DIAMETER FOR BUSHINGS.
48 MANUFACTURE TWO BRONZE BUSHINGS.
49 INSTALL BUSHINGS WITH BENCH PRESS.
50 INSTALL DUST COVERS.
51 ATTACH GREASE GUN TO EACH FITTING.
52 GREASE EACH FITTING.

NT 272 1 REMOVE SOLENOID BRAKE ASSEMBLY.
2 DRAIN GEAR OIL FROM GEAR CASE.
3 REMOVE CAP SCREWS FROM RETAINER.
4 REMOVE LOCK WASHERS.
5 REMOVE RETAINER FROM DRIVE SHAFT.
6 REMOVE HEX NUTS.
7 REMOVE BOLTS AND LOCKWASHERS.
8 REMOVE GEAR CASE AND ENCLOSURE.
9 REMOVE LOAD BRAKE RATCHET ASSEMBLY.
10 REMOVE PLANETARY DRIVE GEAR ASSEMBLY.
11 REMOVE DRIVE SHAFT.
12 REMOVE HOIST DRUM DRIVER GEAR.
13 REMOVE SPLINED DRUM DRIVE FROM DRUM UNIT.
14 REMOVE OIL SEALS FROM DRIVE SHAFT.
15 REMOVE BEARING SPACER FROM SHAFT.
16 REMOVE BALL BEARING FROM DRIVE SHAFT.
17 REMOVE BALL BEARING FROM DRUM DRIVE.
18 REMOVE OIL SEAL FROM DRUM DRIVE.

NT 273 1 ADJUST HAND CHAIN.
2 REMOVE AND INSTALL PIN.
3 REMOVE AND INSTALL NUT AND CHECK WASHER.
4 REMOVE AND INSTALL HAND WHEEL.
5 REMOVE AND INSTALL GALVANIZED DISC, RATCHET DISC, AND LEATHER DISC.
6 REMOVE AND INSTALL DISC HUB.
7 CHECK OPERATION OF BRAKE ASSEMBLY.
8 REMOVE AN INSTALL GEAR COVER SCREWS.
9 REMOVE AND INSTALL GEAR COVER.
10 REMOVE AND INSTALL DRIVING PINION, SHAFT, AND PINI ON CAGE.
11 INSPECT GEARS.
12 CHECK AND ADJUST GEARS.
13 REMOVE AND INSTALL NUT.
14 REMOVE AND INSTALL BOLT.
15 REMOVE AND INSTALL LOAD HOOK.
16 INSPECT HOOK.
17 REMOVE AND INSTALL NUT.
18 REMOVE AND INSTALL BOLT.
19 REMOVE AND INSTALL LOAD CHAIN.
20 CLEAN PARTS.
21 OIL PARTS.
22 MATERIAL HANDLING.

NT 274 1 REMOVE NUT FROM HOOK BOLT.
2 REMOVE BOLT FROM HOOK.
3 REMOVE HOOK.
4 REMOVE BOLT FROM LOAD CHAIN.
5 REMOVE LOAD CHAIN FROM GUIDE.
6 ADJUST HAND CHAIN.
7 REMOVE PIN (NEAR HANDWHEEL).
8 REMOVE NUT AND CHECK WASHER.
9 REMOVE HANDWHEEL.
10 REMOVE EXPOSED GALVANIZED DISC, RATCHET DISC AND L EATHER DISC.
11 REMOVE DISC HUB.
12 REMOVE GEAR COVER SCREWS.
13 REMOVE GEAR COVER.
14 REMOVE DRIVING PINION, AND SHAFT, AND PINION CAGE FROM INTERNAL GEAR.
15 REMOVE NUTS.
16 REMOVE RATCHET CASE, HAND CHAIN GUIDE, TOP HOOK, L OAD SHEAVE, STRIPPER AND LOAD CHAIN GUIDE.
17 CLEAN PARTS.

18 OIL PARTS.
19 ASSEMBLE RATCHET CASE, TOP HOOK, HAND CHAIN GUIDE, LOAD CHAIN GUIDE, LOAD SHEAVE AND STRIPPER.
20 INSTALL NUTS.
21 ASSEMBLE DRIVING PINION, AND SHAFT, AND PINION CAG E IN INTERNAL GEARS.
22 CHECK GEARS FOR ALIGNMENT.
23 INSTALL GEAR COVER.
24 INSTALL GEAR COVER SCREWS.
25 INSTALL DISC HUB.
26 INSTALL GALVANIZED DISC, RATCHET, DISC AND LEATHER DISC.
27 INSTALL HAND WHEEL.
28 INSTALL NUT AND CHECK.
29 INSTALL PIN.
30 INSTALL HAND CHAIN.
31 INSTALL LOAD CHAIN.
32 INSTALL LOAD CHAIN BOLT.
33 INSTALL HOOK (LOAD).
34 INSTALL LOAD HOOK BOLT.
35 FINAL CHECK.
36 HANDLING MATERIAL.

NT 275 1 REINSTALL DRUM SHAFT IN DRUM.
2 REINSTALL OIL SEALS ON SHAFT.
3 REINSTALL ROLLER BEARINGS.
4 REINSTALL THRUST ROLLER RING.
5 REINSTALL SPLINED COUPLING.
6 REASSEMBLE RETAINER TO END COVER.
7 REINSTALL LOCK WASHER.
8 REINSTALL CAP SCREWS.
9 REASSEMBLE END COVER TO DRUM.
10 ADJUST END COVER TO DRUM.
11 REINSTALL ROPE GUARDS.
12 REINSTALL DRUM COVER.
13 REINSTALL BOLTS AND LOCKWASHERS.
14 REINSTALL NUTS.
15 CLEAN NUTS, BOLTS, CAPSCREWS.
16 CLEAN ROLER BEARINGS, ROLLER RING, SPLINED COUPLIN G.
17 CLEAN SHAFT, DRUM, COVER, END COVER, AND DRUM COVE R.
18 GREASE ROLLER BEARINGS.

NT 276 1 CLIMB TO AND FROM TROLLEY.
2 REMOVE NUTS.
3 REMOVE BOLTS.
4 RIG AND REMOVE CHAIN HOIST, LOWER OR RAISE LOAD.
5 PRESS OUT 4 PINS FROM TROLLEY, AND 4 BEARINGS FROM WHEELS.
6 REMOVE LOCKING RINGS.
7 CLEAN PARTS.

NT 277 1 REMOVE MOTOR ASSEMBLY.
2 DISASSEMBLE MOTOR.
3 REMOVE HOIST GEAR AND LOAD BRAKE ASSEMBLY.
4 DISASSEMBLE HOIST GEAR AND LOAD BRAKE.
5 DISASSEMBLE WINDING DRUM MECHANISM.

NT 278 1 CLIMB UP AND DOWN LADDER TO BRIDGE.
2 PLACE AND REMOVE WEDGES TO WHEELS, AND JACK TRUCK UP OR DOWN.
3 REMOVE NUTS AND INSTALL ON RAIL SCRAPER.
4 REMOVE AND INSTALL LOCK WASHERS.
5 REMOVE AND INSTALL BOLTS.
6 REMOVE AND INSTALL SCRAPER AND SET ASIDE.
7 REPLACE AND REMOVE BOLTS, WASHERS, AND LOOSE NUTS.
8 REMOVE AND INSTALL BOLTS IN GEAR COVER.
9 REPLACE AND REMOVE BOLTS (LOOSE).
10 REMOVE NUTS FROM AND INSTALL TO WHEEL BEARINGS.
11 REMOVE AND INSTALL LOCKWASHERS.
12 REMOVE BOLTS AND INSTALL.
13 ROLL WHEEL AND BEARING ASSEMBLY NUT, INSTALL.
14 INSPECT WHEEL AND BEARING.
15 MATERIAL HANDLING - JACK, WEDGES, ETC. FROM FLOOR TO CRANE PLATFORM AND BACK TO FLOOR.

NT 279 1 REINSTALL OIL SEALS IN RETAINER.
2 REINSTALL ROLLER BEARINGS IN RETAINER.
3 REINSTALL BEARING SPACER IN RETAINER.
4 REINSTALL LOAD BRAKE RATCHET ASSEMBLY IN GEAR CASE END ENCLOSURE.
5 REINSTALL PLANETARY DRIVE GEAR.
6 REINSTALL HOIST DRUM DRIVER GEAR.
7 REINSTALL SPLINED DRUM DRIVE.
8 REINSTALL DRIVE SHAFT.
9 REASSEMBLE END ENCLOSURE TO GEAR CASE BODY.
10 ADJUST END ENCLOSURE TO GEAR CASE.
11 INSTALL BOLTS AND LOCKWASHERS.
12 INSTALL NUTS.
13 REINSTALL RETAINER IN END ENCLOSURE.
14 ADJUST RETAINER IN END ENCLOSURE.
15 INSTALL LOCKWASHERS ON CAP SCREWS.
16 INSTALL CAP SCREWS.
17 CLEAN NUTS, BOLTS, LOCKWASHERS.
18 CLEAN BALL BEARINGS, SPACER, RETAINERS.
19 CLEAN GEARS, SHAFT, RETAINER CASE, AND END ENCLOSURE.
20 REFILL GEAR CASE WITH OIL.
21 REINSTALL SOLENOID BRAKE ASSEMBLY.

NT 280 1 REMOVE HOIST TROLLEY FROM RAIL 25 FEET ABOVE FLOOR . INCLUDES DISASSEMBLE TROLLEY IN SHOP.

NT 281 1 REMOVE AND REINSTALL HOIST TROLLEY FROM RAIL USING CHAINFALL. DISASSEMBLE AND REASSEMBLE TROLLEY IN
2 REMOVE AND REINSTALL 6000 LB. CAPACITY HOIST FROM RAIL USING CHAINFALL. (ELECTRICAL CONNECTIONS EXC

NT 282 1 REASSEMBLE WINDING DRUM MECHANISM.
2 REASSEMBLE HOIST GEAR AND LOAD BRAKE.
3 REINSTALL HOIST GEAR AND LOAD BRAKE ASSEMBLY.
4 REASSEMBLE MOTOR.
5 REINSTALL MOTOR TO HOIST.

NT 283 1 COMPLETE DISASSEMBLY OF ELECTRIC CABLE HOIST 6000 LB. CAPACITY. HOIST REMOVED FROM RAIL. ELECTRICAL
2 COMPLETE ASSEMBLY OF ELECTRIC CALBE HOIST 6000 LB. CAPCITY. CLEAN AND LUBRICATE PARTS. ELECTRICAL

NT 284 1 REMOVE AND REINSTALL 1 TRUCK WHEEL ON 25 TON OVERH EAD CRANE.
2 LUBRICATE 4 WHEELS WITH OIL.

NT 285 1 COMPLETE DISASSEMBLY AND REASSEMBLY OF ELECTRIC CA BLE HOIST. INCLUDES CLEAN AND LUBRICATE PARTS.
2 REMOVE AND REINSTALL 6000 LB. CAPACITY ELECTRIC HO IST FROM RAIL USING CHAINFALL. (ELECTRICAL CONNEC

NT 286 1 JOB PREPARATION AT DOOR SITE, INCLUDES REMOVE AND REPLACE DUST COVER. TWO MAN CREW.
2 MOVE PALLET TO DOOR, RAISE AND LOWER, POSITION TO WORK.
3 MANUALLY RAISE DOOR APPROXIMATELY 4 FEET.
4 PUNCH 2 HOLES APPROXIMATELY 1 INCH IN DIAMETER NEX T TO BOTTOM SLAT, 1 FOOT IN FROM EACH END.
5 ATTACH AND REMOVE ONE 1/4 INCH DIAMETER NYLON ROPE THROUGH 2 HOLES FROM OUTSIDE AND KNOT.
6 POSITION FORK LIFT TRUCK APPROXIMATELY 25 FEET FRO M CENTER OF DOOR.
7 RAISE DOOR TO FULL HEIGHT OR UNTIL BOTTOM RAILS CL EAR TRACKS.
8 ATTACH ROPE TO LIFTING RINGS ON FORK LIFT TRUCK, T IE-OFF AND REMOVE.
9 BACK OFF TRUCK TO PULL RAIL OUT OF TRACKS. 2ND MA N PULLS UP ON HAND CHAIN.
10 SLOWLY LOWER DOOR BY HAND WHILE PULLING OUT WITH F ORK LIFT TRUCK.
11 BLOCK CURTAIN AWAY FROM RAIL WITH TWO 4 INCH BY 4 INCH SECTIONS.
12 CHISEL OFF 1 END LOCK.
13 POSITION PALLET UNDER CURTAIN.
14 RAISE CURTAIN TO RELIEVE STRAIN ON SLAT TO BE REMO VED.
15 PULL SLAT FROM CURTAIN BY HAND.
16 REMOVE BOTTOM SECTION AND SET ASIDE OUT OF WAY.
17 REMOVE 2 SCREWS FROM END LOCK OF BOTTOM RAIL AND R EPLACE (1/2 OF TIME).
18 REMOVE RAIL FROM DAMAGED SECTION (1/2 OF TIME).
19 GET NEW SECTION FROM TRUCK AND POSITION ON PALLET IN PROPER DIRECTION.
20 INSTALL SLAT USED TO JOIN NEW SECTION TO HANGING S ECTION.
21 REPLACE END LOCKS ON 2 ENDS.
22 INSTALL 2 SCREWS IN EACH LOCK.
23 LOWER PALLET TO FLOOR (1/2 OF TIME).
24 REPLACE BOTTOM RAIL TO NEW SECTION (1/2 OF TIME).
25 REMOVE AND INSTALL 1 END LOCK (1/2 THE TIME).
26 RAISE PALLET TO TOP OF DOOR (CURTAIN STACKS ONTO P ALLET - RAISE OVER TRACK TOP).
27 SLOWLY ALLOW SPRING TENSION TO WIND CURTAIN ONTO B ARREL.
28 LOWER PALLET, CHANGE TO SAFETY PALLET, RAISE OPERA TOR TO TOP.
29 LOWER CURTAIN INTO TRACK GUIDES.
30 REPOSITION FORK LIFT TRUCK.
31 OPERATE DOOR UP AND DOWN TO CHECK OPERATION MANUAL OR POWER).
32 GREASE FITTINGS.
33 GREASE GUIDE CHANNELS.

NT 287 1 JOB PREPARATION AT DOOR SITE, INCLUDING REMOVE AND REPLACE DUST COVER. TWO MAN CREW.
2 OBTAIN EXTRA FORK LIFT TRUCK AT JOB SITE, AND RETU RN.
3 PUNCH 2 HOLES APPROXIMATELY 1 INCH IN DIAMETER IN 3RD SLAT FROM TOP IN EACH END.
4 ATTACH ROPE TO LIFTING RINGS ON FORK LIFT TRUCK AN D TIE-OFF AND REMOVE.
5 TAKE TENSION FROM DOOR BY LOWERING, AND LOCK OFF T O WALL.
6 CHISEL SIX BOLTS TO REMOVE TOP RAIL FROM BARREL.
7 MOVE PALLET TO DOOR, RAISE AND LOWER, POSITION TO WORK.
8 POSITION FORK LIFT TRUCK APPROXIMATELY 5FT FROM CE NTER OF DOOR.
9 ATTACH AND REMOVE ONE 1/4 INCH DIAMETER NYLON ROPE THROUGH TWO HOLES FROM OUTSIDE AND KNOT.
10 TAKE STRAIN ON LINE WITH FORK LIFT TO PULL DOOR UP OVER BARREL (2ND MAN PAYS OUT CHAIN) UNTIL DOOR B
11 ATTACH (1) C-CLAMP TO EACH END OF BOTTOM RAIL, AND REMOVE.
12 ATTACH AND REMOVE NYLON ROPE TO 2 C-CLAMPS AND TO FORK LIFT TRUCK.
13 POSITION 2ND FORK LIFT TRUCK OUTSIDE DOOR CENTER.
14 MANUALLY LOWER TOP RAIL TOWARD FLOOR (2ND MAN PAYS OUT SAFETY ROPE FROM TRUCK).
15 CHISEL OFF END LOCK.
16 POSITION PALLET UNDER CURTAIN.
17 RAISE CURTAIN TO RELIEVE STRAIN ON SLAT TO BE REMO VED.
18 PULL SLAT FROM CURTAIN BY HAND.
19 REMOVE 2 SCREWS FROM END LOCK OF TOP RAIL AND REPL ACE (1/2 OF TIME).
20 REMOVE BROKEN SECTION AND SET ASIDE OUT OF WAY.
21 REMOVE TOP RAIL FROM DAMAGED SECTION(1/2 OF TIME).
22 GET NEW SECTION FROM TRUCK AND POSITION ON PALLET IN PROPER DIRECTION.
23 INSTALL SLAT USED TO JOIN NEW SECTION TO HANGING S ECTION.
24 REPLACE END LOCKS ON 2 ENDS.
25 INSTALL TWO SCREWS IN EACH LOCK.
26 REPLACE BOTTOM RAIL TO NEW SECTION (1/2 OF TIME).
27 INSTALL 1 END LOCK (1/2 OF TIME).
28 SLOWLY CRANK DOOR BACK OVER BARREL TO BALANCE POIN T.
29 ATTACH 4 C-CLAMPS TO EACH END OF TOP RAIL AND REMO VE.
30 ATTACH AND REMOVE NYLON ROPE TO C-CLAMPS AND TO FO RK LIFT TRUCK.
31 POSITION FORK LIFT TRUCK TO MAINTAIN TENSION ON RO PE.
32 LOWER CURTAIN INTO TRACK GUIDES AND TO FLOOR.
33 REPOSITION FORK LIFT TRUCK TO CLEAR JAMS.
34 POSITION BARREL BY ROTATING TO ALIGN BOLT HOLES.
35 INSTALL 6 BOLTS AND NUTS TO ATTACH TOP RAIL TO BAR REL.
36 MOVE FORK LIFT TRUCK.
37 OPERATE DOOR UP AND DOWN TO CHECK OPERATION (MANUA L OR POWER).
38 GREASE FITTINGS.
39 GREASE GUIDE CHANNELS.

NT 288 1 JOB PREPARATION AT DOOR SITE, INCLUDING REMOVE AND REPLACE DUST COVER. TWO MAN CREW.
2 MOVE SAFETY PALLET ASIDE AND PICK UP WORK PALLET.
3 RAISE DOOR APPROXIMATELY 4FT BY HAND.
4 PUNCH 2 - 1" DIAMETER HOLES IN NEXT TO BOTTOM SLAT 1FT IN FROM EACH END.
5 ATTACH AND REMOVE A 1/4 INCH DIAMETER NYLON ROPE T HROUGH 2 HOLES FROM OUTSIDE AND KNOT.
6 POSITION FORK LIFT TRUCK APPROXIMATELY 25FT FROM C ENTER OF DOOR.
7 RAISE DOOR TO FULL HEIGHT OR UNTIL BOTTOM RAIL CLE ARS TRACK.
8 ATTACH ROPE TO LIFTING RINGS ON FORK LIFT TRUCK AN D TIE-OFF AND REMOVE.
9 BACK OFF TRUCK TO PULL RAIL OUT OF TRACKS. 2ND MA N PULLS UP ON HAND CHAIN.
10 SLOWLY LOWER DOOR BY HAND WHILE PULLING OUT WITH F ORK LIFT TRUCK.
11 RAISE PALLET TO TOP OF DOOR (CURTAIN STACKS ONTO P ALLET - RAISE OVER TRACK TOP).
12 ATTACH 1 C-CLAMP TO EACH END OF BOTTOM RAIL, AND R EMOVE.
13 ATTACH AND REMOVE NYLON ROPE TO C-CLAMPS.
14 CHISEL (6) BOLTS TO REMOVE TOP RAIL FROM BARREL.
15 LOWER TOP RAIL TO PALLET (PAY OUT SAFETY LINE).
16 LOWER CURTAIN (ON PALLET) TO GROUND (CAREFULLY).
17 PULL ON SAFETY LINES TO SPREAD CURTAIN OUT ON FLOO R OR GROUND (USE FORK LIFT).
18 CHISEL OFF 2 END LOCKS.
19 PULL 2 SLATS FROM CURTAIN BY HAND (EACH SIDE OF DA MAGED SECTION).
20 MATERIAL HANDLING TO MOVE BAD SECTION TO TRUCK.
21 GET NEW SECTION FROM AND POSITION ON PALLET IN PRO PER DIRECTION.
22 INSTALL SLAT USED TO JOIN NEW SECTION TO HANGING S ECTION.
23 REPLACE END LOCKS ON 2 ENDS.
24 INSTALL 2 SCREWS IN EACH LOCK.
25 FOLD CURTAIN BACK AND FORTH TO STACK UP.
26 LOAD CURTAIN ONTO PALLET WITH FORK LIFT TRUCK.
27 RAISE CURTAIN AND POSITION PALLET TO BARREL.
28 THREAD SAFETY LINES OVER BARREL.
29 PULL TOP EDGE UNDER AND OVER BARREL TO ALIGN HOLES
30 INSTALL 6 BOLTS AND NUTS TO ATTACH TOP RAIL TO BAR REL.
31 SLOWLY ALLOW SPRING TENSION TO WIND CURTAIN ONTO B ARREL.
32 LOWER PALLET, CHANGE TO SAFETY PALLET, RAISE OPERA TOR TO TOP.
33 LOWER CURTAIN INTO TRACK GUIDES.
34 REPOSITION FORK LIFT TRUCK FOR ALL HANDLING AND FI TTING OF CURTAIN.
35 OPERATE DOOR UP AND DOWN TO CHECK OPERATION(MANUAL OR POWER).
36 GREASE FITTINGS.
37 GREASE GUIDE CHANNELS.

NT 289 1 JOB PREPARATION AT DOOR SITE, INCLUDING REMOVE AND REPLACE DUST COVER. TWO MAN CREW.
2 MOVE PALLET TO DOOR, RAISE AND LOWER, POSITION TO WORK.
3 RAISE DOOR APPROXIMATELY 4FT BY HAND.
4 PUNCH 2 HOLES APPROXIMATELY 1 INCH IN DIAMETER NEX T TO BOTTOM SLAT, 1 FOOT IN FROM EACH END.
5 ATTACH & REMOVE A 1/4 INCH DIAMETER NYLON ROPE THR OUGH 2 HOLES FROM OUTSIDE AND KNOT.
6 POSITION FORK LIFT TRUCK APPROXIAMTELY 25FT FROM C ENTER OF DOOR.
7 RAISE DOOR TO FULL HEIGHT, OR UNTIL BOTTOM RAIL CL EARS TRACKS.
8 ATTACH ROPE TO LIFTING RINGS ON FORK LIFT TRUCK, T IE-OFF AND REMOVE.
9 BACK OFF TRUCK TO PULL RAIL OUT OF TRACKS. 2ND MA N PULLS UP ON HAND CHAIN.
10 SLOWLY LOWER DOOR BY HAND WHILE PULLING OUT WITH F ORK LIFT TRUCK.
11 BLOCK CURTAIN AWAY FROM RAIL WITH 2 - 4" X 4" SECT IONS.
12 CHISEL OFF 1 END LOCK.
13 POSITION PALLET UNDER CURTAIN.
14 RAISE CURTAIN TO RELIEVE STRAIN ON SLAT TO BE REMO VED.
15 PULL SLAT FROM CURTAIN BY HAND.
16 REMOVE BOTTOM SECTION AND SET ASIDE OUT OF WAY.
17 REMOVE 2 SCREWS FROM END LOCK OF BOTTOM RAIL AND R EPLACE (1/2 OF TIME).
18 REMOVE BOTTOM RAIL FROM DAMAGED SECTION (1/2 OF TI ME).
19 GET NEW SECTION FROM TRUCK AND POSITION ON PALLET IN PROPER DIRECTION.
20 INSTALL SLAT USED TO JOIN NEW SECTION TO HANGING S ECTION.
21 REPLACE 2 END LOCKS ON ENDS.
22 LOWER PALLET TO FLOOR (1/2 OF TIME).
23 REPLACE BOTTOM RAIL TO NEW SECTION (1/2 OF TIME).
24 INSTALL (1) END LOCK (1/2 OF TIME).
25 INSTALL 2 SCREWS TO END LOCK (1/2 OF TIME).
26 RAISE PALLET TO TOP OF DOOR (CURTAIN STACKS ONTO P ALLET - RAISE OVER TRACK TOP((SLOWLY).
27 SLOWLY ALLOW SPRING TENSION TO WIND CURTAIN ONTO B ARREL.
28 LOWER PALLET, CHANGE TO SAFETY PALLET, RAISE OPERA TOR TO TOP.
29 LOWER CURTAIN INTO TRACK GUIDES.
30 REPOSITION FORK LIFT TRUCK.
31 OPERATE DOOR UP AND DOWN TO CHECK OPERATION (MANUA L OR POWER).
32 GREASE FITTINGS.
33 GREASE GUIDE CHANNELS.

NT 290 1 JOB PREPARATION AT DOOR SITE, INCLUDING REMOVE AND REPLACE DUST COVER. TWO MAN CREW.
2 OBTAIN 2ND FORK LIFT TRUCK AT JOB SITE AND RETURN.
3 PUNCH 2 HOLES APPROXIMATELY 1 INCH IN DIAMETER IN THIRD SLAT FROM TOP IN EACH END.
4 ATTACH ROPE TO LIFTING RINGS ON FORK LIFT TRUCK, TIE-OFF AND REMOVE.
5 TAKE TENSION FROM DOOR BY LOWERING, AND LOCK OFF TO WALL.
6 CHISEL 10 BOLTS TO REMOVE TOP RAIL FROM BARREL.
7 MOVE PALLET TO DOOR, RAISE AND LOWER, POSITION TO WORK.
8 POSITION FORK LIFT TRUCK APPROXIMATELY 25FT FROM CENTER OF DOOR.
9 ATTACH AND REMOVE A 1/4 INCH DIAMETER NYLON ROPE THROUGH 2 HOLES FROM OUTSIDE AND KNOT.
10 TAKE STRAIN ON LINE WITH FORK LIFT TO PULL DOOR UP OVER BARREL,(2ND MAN PAYS OUT CHAIN) UNTIL DOOR B
11 ATTACH 1 C-CLAMP TO EACH END OF BOTTOM RAIL, AND REMOVE.
12 ATTACH AND REMOVE NYLON ROPE TO 2 C-CLAMPS, AND TO FORK LIFT TRUCK.
13 POSITION 2ND FORK LIFT TRUCK OUTSIDE DOOR CENTER.
14 MANUALLY LOWER TOP RAIL TOWARD FLOOR (2ND MAN PAYS OUT SAFETY ROPE FROM TRUCK).
15 CHISEL OFF 1 END LOCK.
16 POSITION PALLET UNDER CURTAIN.
17 RAISE CURTAIN TO RELIEVE STRAIN ON SLAT TO BE REMOVED.
18 PULL SLAT FROM CURTAIN BY HAND.
19 REMOVE 2 SCREWS FROM END LOCK OF TOP RAIL AND REPLACE (1/2 OF TIME).
20 REMOVE BROKEN SECTION AND SET ASIDE OUT OF WAY.
21 REMOVE TOP RAIL FROM DAMAGED SECTION(1/2 OF TIME).
22 GET NEW SECTION FROM TRUCK AND POSITION ON PALLET IN PROPER DIRECTION.
23 INSTALL SLAT USED TO JOIN NEW SECTION TO HANGING SECTION.
24 REPLACE 2 END LOCKS ON ENDS.
25 INSTALL 2 SCREWS IN EACH LOCK.
26 REPLACE BOTTOM RAIL TO NEW SECTION (1/2 OF TIME).
27 INSTALL 1 END LOCK (1/2 OF TIME).
28 SLOWLY CRANK DOOR BACK OVER BARREL TO BALANCE POINT.
29 ATTACH 1 C-CLAMP TO EACH END OF TOP RAIL, AND REMOVE.
30 ATTACH AND REMOVE NYLON ROPE TO C-CLAMPS AND TO FORK LIFT TRUCK.
31 POSITION FORK LIFT TRUCK TO MAINTAIN TENSION ON ROPE.
32 LOWER CURTAIN INTO TRACK GUIDES AND TO FLOOR.
33 REPOSITION FORK LIFT TRUCK TO CLEAR JAMS.
34 POSITION BARREL BY ROTATING TO ALIGN BOLT HOLES.
35 INSTALL 10 BOLTS AND NUTS TO ATTACH TOP RAIL TO BARREL.
36 MOVE FORK LIFT TRUCK.
37 OPERATE DOOR UP AND DOWN TO CHECK OPERATION (MANUAL OR POWER).
38 GREASE FITTINGS.
39 GREASE GUIDE CHANNELS.

NT 291 1 JOB PREPARATION AT DOOR SITE, INCLUDING REMOVE AND REPLACE DUST COVER. TWO MAN CREW.
2 MOVE SAFETY PALLET ASIDE, AND PICK UP WORK PALLET.
3 RAISE DOOR APPROXIMATELY 4FT BY HAND.
4 PUNCH 2 HOLES APPROXIMATELY 1 INCH IN DIAMETER IN NEXT TO BOTTOM SLAT, 1 FOOT FROM EACH END.
5 ATTACH AND REMOVE A 1/4 INCH DIAMETER NYLON ROPE T HROUGH 2 HOLES FROM OUTSIDE AND KNOT.
6 POSITION FORK LIFT TRUCK APPROXIMATELY 25FT FROM C ENTER OF DOOR
7 RAISE DOOR TO FULL HEIGHT, OR UNTIL BOTTOM RAIL CL EARS TRACKS.
8 ATTACH ROPE TO LIFTING RINGS ON FORK LIFT TRUCK, T IE-OFF AND REMOVE.
9 BACK OFF TRUCK TO PULL RAIL OUT OF TRACKS. 2ND MA N PULLS UP ON HAND CHAIN.
10 SLOWLY LOWER DOOR BY HAND WHILE PULLING OUT WITH F ORK LIFT TRUCK.
11 RAISE PALLET TO TOP OR DOOR (CURTAIN STACKS ONTO P ALLET - RAISE OVER TRACK TOP) (SLOWLY).
12 ATTACH 1 C-CLAMP TO EACH END OF BOTTOM RAIL, AND R EMOVE.
13 ATTACH AND REMOVE NYLON ROPE TO C-CLAMPS.
14 LOWER TOP RAIL TO PALLET (PAY OUT SAFETY LINE).
15 LOWER CURTAIN (ON PALLET) TO GROUND (CAREFULLY).
16 PULL ON SAFETY LINES TO SPREAD CURTAIN OUT ON FLOO R OR GROUND (USE FORK LIFT).
17 CHISEL OFF 2 END OF LOCKS, AND 10 BOLTS.
18 PULL 2 SLATS FROM CURTAIN BY HAND (EACH SIDE OF DA MAGED SECTION).
19 MATERIAL HANDLING TO MOVE BAD SECTION TO TRUCK.
20 GET NEW SECTION FROM TRUCK AND POSITION ON PALLET IN PROPER DIRECTION.
21 INSTALL SLAT USED TO JOIN NEW SECTION TO HANGING S ECTION.
22 REPLACE 2 END LOCKS ON ENDS.
23 INSTALL 2 SCREWS IN EACH LOCK.
24 FOLD CURTAIN BACK AND FORTH TO STACK UP.
25 LOAD CURTAIN ONTO PALLET WITH FORK LIFT TRUCK.
26 RAISE CURTAIN AND POSITION PALLET TO BARREL (SLOWL Y).
27 THREAD SAFETY LINES OVER BARREL.
28 PULL TOP EDGE UNDER AND OVER BARREL TO ALIGN HOLES .
29 INSTALL 10 BOLTS AND NUTS TO ATTACH TOP RAIL TO BA RREL.
30 SLOWLY ALLOW SPRING TENSION TO WIND CURTAIN ONTO B ARREL
31 LOWER PALLET, CHANGE TO SAFETY PALLET, RAISE OPERA TOR TO TOP.
32 LOWER CURTAIN INTO TRACK GUIDES.
33 REPOSITION FORK LIFT TRUCK FOR ALL HANDLING AND FI TTING OF CURTAIN.
34 OPERATE DOOR UP AN DOWN TO CHECK OPERATION (MANUAL OR POWER).
35 GREASE FITTINGS.
36 GREASE GUIDE CHANNELS.

NT 292 1 JOB PREPARATION AT DOOR SITE, INCLUDING REMOVE AND REPLACE DUST COVER. TWO MAN CREW.
2 MOVE SAFETY PALLET ASIDE AND PICK UP WORK PALLET.
3 RAISE DOOR APPROXIMATELY 4FT BY HAND.
4 PUNCH 2 HOLES APPROXIMATELY 1 INCH IN DIAMETER NEX T TO BOTTOM SLAT 1 FOOT IN FROM EACH END.
5 ATTACH AND REMOVE A 1/4 INCH DIAMETER NYLON ROPE T HROUGH 2 HOLES FROM OUTSIDE AND KNOT.
6 POSITION FORK LIFT TRUCK APPROXIMATELY 25FT FROM C ENTER OF DOOR.
7 RAISE DOOR TO FULL HEIGHT, OR UNTIL BOTTOM RAIL CL EARS TRACKS.
8 ATTACH ROPE TO LIFTING RINGS ON FORK LIFT TRUCK, T IE-OFF AND REMOVE.
9 BACK OFF TRUCK TO PULL RAIL OUT OF TRACKS. 2ND MA N PULLS UP ON HAND CHAIN.
10 SLOWLY LOWER DOOR BY HAND WHILE PULLING OUT WITH F ORK LIFT TRUCK.
11 ATTACH 1 C-CLAMP TO EACH END OF BOTTOM RAIL AND RE MOVE.
12 ATTACH AND REMOVE NYLON ROPE TO C-CLAMPS.
13 CHISEL 6 BOLTS TO REMOVE TOP RAIL FROM BARREL.
14 LOWER TOP RAIL TO PALLET (PAY OUT SAFETY LINE).
15 LOWER CURTAIN (ON PALLET) TO GROUND (CAREFULLY).
16 MOVE CURTAIN TO TRUCK.
17 LOAD NEW CURTAIN TO PALLET.
18 RAISE CURTAIN AND POSITION PALLET TO BARREL.
19 THREAD SAFETY LINES OVER BARREL.
20 PULL TOP EDGE UNDER AND OVER BARREL TO ALIGN HOLES .
21 INSTALL 6 BOLTS, AND NUTS TO ATTACH TOP RAIL TO BA RREL.
22 SLOWLY ALLOW SPRING TENSION TO WIND CURTAIN ONTO B ARREL.
23 LOWER PALLET, CHANGE TO SAFETY PALLET, RAISE OPERA TOR TO TOP.
24 LOWER CURTAIN INTO TRACK GUIDES.
25 REPOSITION FORK LIFT TRUCK FOR ALL HANDLING AND FI TTING OR CURTAIN.
26 OPERATE DOOR UP AND DOWN TO CHECK OPEATION (MANUAL OR POWER).
27 GREASE FITTINGS.
28 GREASE GUIDE CHANNELS.

NT 293 1 JOB PREPARATION AT DOOR SITE, INCLUDING REMOVE AND REPLACE DUST COVER. TWO MAN CREW.
2 RAISE DOOR APPROXIMATELY 4FT BY HAND.
3 PUNCH 2 HOLES APPROXIMATELY 1 INCH IN DIAMETER NEX T TO BOTTOM SLAT 1 FOOT IN FROM EACH END.
4 ATTACH AND REMOVE A 1/4 INCH DIAMETER NYLON ROPE T HROUGH 2 HOLES FROM OUTSIDE AND KNOT.
5 POSITON FORK LIFT TRUCK APPROXIMATELY 25FT FROM CE NTER OF DOOR.
6 RAISE DOOR TO FULL HEIGHT OR UNTIL BOTTOM RAIL CLE ARS TRACKS.
7 ATTACH ROPE TO LIFTING RINGS ON FORK LIFT TRUCK, T IE-OFF AND REMOVE.
8 BACK OFF TRUCK TO PULL RAIL OUT OF TRACKS. 2ND MA N PULLS UP ON HAND CHAIN.
9 SLOWLY LOWER DOOR BY HAND WHILE PULLING OUT WITH F ORK LIFT TRUCK.
10 MOVE SAFETY PALLET ASIDE AND PICK UP WORK PALLET.
11 ATTACH 1 C-CLAMP TO EACH END OF BOTTOM RAIL, AND R EMOVE.

12 ATTACH AND REMOVE NYLON ROPE TO C-CLAMPS.
13 CHISEL 10 BOLTS TO REMOVE TOP RAIL FROM BARREL.
14 LOWER TOP RAIL TO PALLET (PAY OUT SAFETY LINE).
15 LOWER CURTAIN (ON PALLET) TO GROUND (CAREFULLY).
16 MOVE CURTAIN TO TRUCK.
17 LOAD NEW CURTAIN TO PALLET.
18 RAISE CURTAIN AND POSITION PALLET TO BARREL (SLOWL
Y).
19 THREAD SAFETY LINES OVER BARREL.
20 PULL TOP EDGE UNDER AND OVER BARREL TO ALIGN HOLES
.
21 INSTALL 10 BOLTS AND NUTS TO ATTACH TOP RAIL TO BA
RREL.
22 SLOWLY ALLOW SPRING TENSION TO WIND CURTAIN ONTO B
ARREL.
23 LOWER PALLET, CHANGE TO SAFETY PALLET, RAISE OPERA
TOR TO TOP.
24 LOWER CURTAIN INTO TRACK GUIDES.
25 REPOSITION FORK LIFT TRUCK FOR ALL HANDLING, AND F
ITTING OF CURTAIN.
26 OPERATE DOOR UP AND DOWN TO CHECK OPERATION(MANUAL
OR POWER).
27 GREASE FITTINGS.
28 GREASE GUIDE CHANNELS.

NT 294
1 OBTAIN 2 FORK LIFT TRUCKS AT JOB SITE AND RETURN.
2 OBTAIN SAFETY PALLET FROM TRUCK AND RETURN TO TRUCK.
3 MOVE MATERIAL BLOCKING DOOR OUT OF WAY(AVG. 6 PCS) (1/2 OF TIME).
4 LOAD TOOL BOX TO PALLET AND GET ON-GET OFF, UNLOAD BOX AND SET ASIDE.
5 MOVE PALLET TO AND FROM DOOR, RAISE AND LOWER, POSITION TO WORK.
6 REMOVE AND INSTALL 12 SCREWS IN DUST COVER (OUTDOORS ONLY).
7 REMOVE AND INSTALL 2 DUST COVER SECTIONS (1/2 OF TIME).
8 REMOVE AND INSTALL 2 SUPPORTING BRACKET BOLTS (1/2 OF TIME).
9 REMOVE AND INSTALL 2 SUPPORTING BRACKETS.
10 TEST SPRING TENSION.
11 REMOVE 2 BOLTS FROM TENSION PINION.
12 DISENGAGE PINION FROM RING GEAR TO RELEASE TENSION.
13 REMOVE 3RD BOLT FROM TENSION PINION.
14 REMOVE TENSION PINION.
15 ROTATE BARREL TO SLACK CURTAIN.
16 CHISEL 6 BOLTS FROM TOP RAIL.
17 REMOVE 3 BOLTS FROM LARGE RING GEAR.
18 SLIDE RING GEAR TOWARD BARREL CENTER.
19 REMOVE 3 BOLTS FROM EACH END OF BARREL FLANGES.
20 LOWER BARREL TO FLOOR (CAREFULLY).
21 MOVE BARREL TO STANCHION.
22 SECURE ONE END OF BARREL TO STANCHION AND FORK LIFT WITH CHAIN.
23 REMOVE 3 BOLTS FROM END CAP.
24 ATTACH 2ND CHAIN TO FLANGE ON SPRING END AND FORK LIFT.
25 PULL SPRING FROM BARREL.
26 REMOVE ANCHOR BOLT AND NUT FROM BARREL.
27 REMOVE CHAIN FROM STANCHION AND ATTACH TO BARREL.
28 REMOVE SPRING FROM BARREL BY LIFTING.
29 PLACE SPRING IN TRUCK FOR REMOVAL TO DUMP.
30 ATTACH CHAIN TO STANCHION.
31 REMOVE CHAIN FROM FORK LIFT AND ATTACH TO SPRING.
32 PUSH SPRING INTO BARREL.
33 INSTALL ANCHOR BOLT AND NUT.
34 ATTACH CHAIN TO FORK LIFT.
35 PULL SPRING OUT OVER END OF BARREL AND INSERT FLAT BAR TO RETAIN.
36 REMOVE CHAIN FROM SPRING.
37 REMOVE END CAP FROM OLD SPRING AND ATTACH TO END CAP FLANGE.
38 ATTACH CHAIN TO END CAP FLANGE.
39 TAKE STRAIN ON LINE AND REMOVE RETAINING BAR.
40 RESEAT CAP - ALIGN HOLES.
41 INSTALL 3 BOLTS TO CAP.
42 PLACE BARREL ON LIFTING PALLET.
43 LIFT BARREL TO POSITION.
44 POSITION BARREL TO ATTACH RAIL.
45 INSTALL 6 BOLTS AND NUTS TO ATTACH TOP RAIL TO BARREL.
46 LOOSELY INSTALL 1 BOLT INTO TENSION PINION GEAR.
47 RAISE DOOR TO "UP" POSITION.
48 ENGAGE PINION GEAR TO TENSION GEAR.
49 LOWER DOOR TO FLOOR.
50 INSTALL 3 BOLTS IN TENSION PINION GEAR.
51 RAISE DOOR TO 3 TO 4 INCHES FROM STOP.

52 TURN WORM GEAR TO TIGHTEN SPRING.
53 OPERATE DOOR UP AND DOWN TO CHECK FOR EQUAL TENSIO N IN BOTH DIRECTIONS.

NT 295 1 OBTAIN FORK LIFT TRUCK AT JOB SITE AND RETURN.
2 OBTAIN SAFETY PALLET FROM TRUCK AND RETURN TO TRUCK.
3 MOVE MATERIALS BLOCKING DOOR OUT OF WAY (AVG. 6 PCS.-1/2 OF TIME).
4 LOAD TOOL BOX TO PALLET, GET ON-GET OFF, UNLOAD BOX AND SET ASIDE.
5 MOVE PALLET TO AND FROM DOOR, RAISE AND LOWER, POSITION TO WORK.
6 ROTATE BARREL - TO EASE TENSION.
7 BLOCK UP DOOR 1 FOOT FROM EACH END AND REMOVE.
8 ROTATE BARREL TO SLACK CHAIN OR CABLE.
9 REMOVE 2 BOLTS FROM CHAIN GUIDE BRACKET AND REPLACE (BOTH SIDES).
10 REMOVE AND REPLACE CHAIN GUIDE BRACKET.
11 INSPECT POCKET WHEEL FOR EXCESSIVE WEAR.
12 REMOVE COTTER PIN AND REPLACE.
13 REMOVE CHAIN OR CABLE FROM SHAFT AND REPLACE.
14 REMOVE WORK CHAIN OR CABLE FROM WHEEL OR DRUM AND SET ASIDE.
15 INSTALL NEW CHAIN OR CABLE FROM TOP TO DETERMINE LENGTH.
16 CUT CHAIN OR CABLE WITH HACKSAW
17 ATTACH CHAIN OR CABLE TO DOOR BOTTOM.
18 STRAIGHTEN CHAIN AND PLACE IN POCKET WHEEL OR REEL CABLE TO DRUM.
19 BOLT LOOSE END OF CHAIN TO OUTSIDE OF RAIL AND REMOVE.
20 LOWER DOOR TO FLOOR.
21 CHECK TO SEE THAT DOOR IS LEVEL.
22 ADJUST LEVEL-LOOSEN AND TIGHTEN 2 BOLTS.
23 MOVE GUIDE BACK AND INTO POSITION.
24 MOVE LINKS OR DRUM TO LEVEL DOOR.

NT 296 1 OBTAIN FORK LIFT TRUCK AT JOB SITE AND RETURN.
2 OBTAIN SAFETY PALLET FROM TRUCK AND RETURN TO TRUCK.
3 MOVE MATERIAL BLOCKING DOOR OUT OF WAY (AVG. 6 PCS.-1/2 OF TIME).
4 LOAD TOOL BOX TO PALLET, GET ON-GET OFF, UNLOAD BOX AND SET ASIDE.
5 MOVE PALLET TO AND FROM DOOR, RAISE AND LOWER, POSITION TO WORK.
6 REMOVE AND INSTALL 12 SCREWS IN DUST COVER (OUTDOORS ONLY).
7 REMOVE AND INSTALL 2 DUST COVER SECTIONS (1/2 OF TIME).
8 REMOVE AND INSTALL 2 SUPPORTING BRACKET BOLTS (1/2 THE TIME).
9 REMOVE AND INSTALL 2 SUPPORTING BRACKETS.
10 TIGHTEN 1 BOLT ON BARREL CLAMP.
11 LOOSEN BOLTS ON BARREL CLAMPS ACROSS BARREL AND TIGHTEN.
12 ADJUST BARREL CAUSING DOOR TO MOVE DOWN TO LEVEL POSITION - ON ELECTRIC DOORS ONLY.
13 REMOVE AND REPLACE 4 SCREWS FROM LIMIT SWITCH BOX.
14 RAISE DOOR TO TOP AND LOWER.
15 ADJUST UPPER AND LOWER LIMIT SWITCH.

NT 297
1 OBTAIN FORK LIFT TRUCK AT JOB SITE AND RETURN.
2 OBTAIN SAFETY PALLET FROM TRUCK AND RETURN TO TRUCK.
3 MOVE MATERIAL BLOCKING DOOR OUT OF WAY (AVG. 6 PCS -1/2 OF TIME).
4 LOAD TOOL BOX TO PALLET, GET ON-GET OFF, UNLOAD BOX AND SET ASIDE.
5 MOVE PALLET TO AND FROM DOOR, RAISE AND LOWER, POSITION TO WORK.
6 REMOVE COTTER KEY HOLDING MASTER LINK TO DRIVE CHAIN.
7 REMOVE DRIVE CHAIN FROM SPROCKET.
8 REMOVE 6 MOUNTING BOLTS.
9 REMOVE UNIT TO PALLET.
10 LOAD UNIT TO TRUCK AND UNLOAD.
11 REMOVE 4 BOLTS FROM MANUAL CHAIN PINION BRACKET.
12 DISCONNECT 2 WIRES FROM BRAKE SOLENOID.
13 REMOVE AND ASIDE BRAKE SOLENOID.
14 REMOVE SET SCREW FROM BRAKE DRUM PINION GEAR.
15 REMOVE BRAKE DRUM PINION GEAR.
16 REMOVE 4 BOLTS SECURING MOTOR TO POWER TRANSMISSION.
17 REMOVE MASTER LINK FROM LIMIT SWITCH CHAIN.
18 REMOVE 4 BOLTS FROM POWER TRANSMISSION BASE PLATE.

NT 298
1 OBTAIN FORK LIFT TRUCK AT JOB SITE AND RETURN.
2 OBTAIN SAFETY PALLET FROM TRUCK, AND RETURN TO TRUCK.
3 MOVE MATERIAL BLOCKING DOOR OUT OF WAY (AVG. 6 PCS -1/2 OF TIME).
4 LOAD TOOL BOX TO PALLET, GET ON-GET OFF, UNLOAD BOX AND SET ASIDE.
5 MOVE PALLET TO AND FROM DOOR, RAISE AND LOWER, POSITION TO WORK.
6 REPLACE POWER TRANSMISSION BASE PLATE.
7 REPLACE 4 BOLTS TO BASE PLATE.
8 REPLACE MASTER LINK FROM LIMIT SWITCH CHAIN.
9 REPLACE MOTOR TO POWER TRANSMISSION.
10 REPLACE 4 BOLTS.
11 REPLACE BRAKE DRUM PINION GEAR.
12 REPLACE SET SCREW.
13 REPLACE BRAKE SOLENOID.
14 RECONNECT 2 WIRES FROM BRAKE SOLENOID.
15 REPLACE MANUAL CHAIN PINION BRACKET.
16 REPLACE 4 BOLTS.
17 LOAD UNIT TO TRUCK AND UNLOAD.
18 PLACE UNIT ON WORK PALLET.
19 PLACE UNIT IN POSITION.
20 INSTALL 6 MOUNTING BOLTS.
21 PLACE DRIVE CHAIN ON SPROCKET.
22 REPLACE COTTER KEY HOLDING MASTER LINK TO DRIVE CHAIN.
23 OIL LEVERS, LINKS, SPRINGS, ETC.
24 OPERATE DOOR TO CHECK MECHANISM.

NT 299 1 OBTAIN FORK LIFT TRUCK AT JOB SITE AND RETURN.
2 OBTAIN SAFETY PALLET FROM TRUCK AND RETURN TO TRUCK.
3 MOVE MATERIAL BLOCKING DOOR OUT OF WAY (AVG. 6 PCS -1/2 OF TIME).
4 LOAD TOOL BOX TO PALLET, GET ON-GET OFF, UNLOAD BOX AND SET ASIDE.
5 MOVE PALLET TO AND FROM DOOR, RAISE AND LOWER, POSITION TO WORK.
6 REMOVE 4 NUTS FROM PLATE AND REPLACE.
7 REMOVE AND REPLACE ROLLER UNIT.

NT 300 1 OBTAIN FORK LIFT TRUCK AT JOB SITE AND RETURN.
2 OBTAIN SAFETY PALLET FROM TRUCK, AND RETURN TO TRUCK.
3 MOVE MATERIAL BLOCKING DOOR OUT OF WAY (AVG. 6 PCS -1/2 OF TIME).
4 LOAD TOOL BOX TO PALLET, GET ON-GET OFF, UNLOAD BOX AND SET ASIDE.
5 MOVE PALLET TO AND FROM DOOR, RAISE AND LOWER, POSITION TO WORK.
6 REMOVE 4 NUTS FROM PLATES AND REPLACE.
7 REMOVE AND REPLACE ROLLER UNIT.

NT 301 1 OBTAIN FORK LIFT TRUCK AT JOB SITE AND RETURN.
2 OBTAIN WORK PALLET FROM TRUCK AND RETURN TO TRUCK.
3 MOVE MATERIAL BLOCKING DOOR OUT OF WAY (AVG. 6 PCS -1/2 OF TIME).
4 MOVE PALLET TO AND FROM DOOR, RAISE AND LOWER, POSITION TO WORK.
5 BEND AND FIT SLATS INTO DOOR RAIL.
6 REMOVE DENT.
7 CHECK DOOR OPERATION.
8 GREASE RAIL AREA WHERE DAMAGED.

NT 302 1 OBTAIN FORK LIFT TRUCK AT JOB SITE AND RETURN.
2 OBTAIN WORK PALLET FROM TRUCK AND RETURN TO TRUCK.
3 MOVE MATERIAL BLOCKING DOOR OUT OF WAY (AVG. 6 PCS -1/2 OF TIME).
4 LOAD TOOL BOX TO PALLET, GET ON-GET OFF, UNLOAD BOX AND SET ASIDE.
5 MOVE PALLET TO AND FROM DOOR, RAISE AND LOWER, POSITION TO WORK.
6 REMOVE BOLTS FROM HINGES AND REPLACE.
7 REMOVE PANEL AND PLACE ON PALLET.
8 MOVE DAMAGED SECTION OUT.
9 UNLOAD OLD SECTION FROM PALLET AND LOAD NEW PALLET.
10 MOVE NEW SECTION INTO PLACE.
11 POSITION NEW SECTION.
12 DRILL BOLT HOLES.
13 OPERATE DOOR TO TEST OPERATION.
14 REMOVE BOTTOM RAIL BOLTS AND REPLACE(1/2 OF TIME).
15 REMOVE BOTTOM RAIL AND REPLACE (1/2 OF TIME).

NT 303 1 REPLACE ENTIRE CURTAIN WITH NEW CURTAIN - TO 16FT HIGH AND 15FT WIDE - MANUAL OR ELECTRIC TYPE ROLL-
2 REPLACE BROKEN SPRING ON SINGLE OR DOUBLE DOOR - MANUAL OR ELECTRIC - 2 MAN CREW WITH FORK LIFT TRUC
3 REPLACE (2) LIFT CHAINS OR CABLES ON OVERHEAD DOOR -MANUAL OR ELECTRIC-ALL SIZES-2 MAN CREW.
4 REMOVE MOTOR, DRIVE COUPLINGS, BRAKE SHOES, COUPLINGS OR DRIVE TRANSMISSION, ETC. FROM DOOR- WORK DO
5 REPLACE MOTOR, DRIVE COUPLINGS, BRAKE SHOES, COUPLINGS OR DRIVE TRANSMISSION ETC. IN UNIT AND INSTAL

NT 304 1 REPLACE EXISTING CURTAIN WITH NEW CURTAIN - MANUAL OR ELECTRIC TYPE ROLL-UP DOOR - 16FT 1" TO 24FT H
2 REPLACE BROKEN SPRING ON SINGLE OR DOUBLE DOOR - MANUAL OR ELECTRIC - 2 MAN CREW WITH FORK LIFT TRUC
3 REPLACE (2) LIFT CHAINS OR CABLES ON OVERHEAD DOOR -MANUAL OR ELECTRIC-ALL SIZES-2 MAN CREW.
4 REMOVE MOTOR , DRIVE COUPLINGS, BRAKE SHOES, COUPLINGS OR DRIVE TRANSMISSION, ETC. FROM DOOR.- WORK
5 REPLACE MOTOR, DRIVE COUPLINGS, BRAKE SHOES, COUPLINGS OR DRIVE TRANSMISSION ETC. IN UNIT AND REINST

NT 305 1 JOB PREPARATION AT DOOR SITE, INCLUDING REMOVE AND REPLACE DUST COVER. TWO MAN CREW.
2 REMOVE BELTS FROM ROLLERS AND REPLACE (16 ROLLERS)
3 REMOVE BOLTS FROM HINGES TO SEPARATE SECTIONS.
4 REMOVE SECTIONS FROM DOOR SITE TO TRUCK USING FORK LIFT.
5 BRING SECTIONS TO DOOR SITE FROM TRUCK USING FORK LIFT.
6 REMOVE AND INSTALL DOOR SECTIONS INTO DOOR RAILS.
7 PLACE ROLLER PLATES IN RAILS AND POSITION TO HOLES .
8 PLACE HINGES IN POSITION.
9 INSTALL BOLTS TO HINGES.
10 INSTALL BOTTOM AND TOP RAILS.
11 BOLT RAILS TO PANELS.
12 MOVE PALLET TO AND FROM DOOR, RAISE AND LOWER, POSITION TO WORK.
13 REPLACE BROKEN SPRING ON SINGLE OR DOUBLE DOOR - MANUAL OR ELECTRIC-2 MAN CREW WITH FORK LIFT TRUCKS
14 REPLACE 2 LIFT CHAINS OR CABLES ON OVER HEAD DOOR -MANUAL OR ELECTRIC-ALL SIZES-2 MAN CREW.
15 REMOVE MOTOR, DRIVE COUPLING, BRAKE SHOES, COUPLINGS OR DRIVE TRANSMISSION ETC. FROM DOOR- WORK DONE
16 REPLACE MOTOR, DRIVE COUPLINGS, BRAKE SHOES, COUPLINGS OR DRIVE TRANSMISSION ETC. IN UNIT AND INSTAL

NT 306 1 OBTAIN FORK LIFT TRUCK AT JOB SITE AND RETURN.
2 OBTAIN SAFETY PALLET FROM TRUCK, AND RETURN TO TRUCK.
3 MOVE MATERIAL BLOCKING (AVG. 6 PCS.-1/2 OF TIME).
4 LOAD TOOL BOX TO PALLET, GET ON-GET OFF , UNLOAD BOX AND SET ASIDE.

NT 307 1 OBTAIN FORK LIFT TRUCK AT JOB SITE AND RETURN.
2 OBTAIN SAFETY PALLET FROM TRUCK, AND RETURN TO TRU CK.
3 MOVE MATERIAL BLOCKING DOOR OUT OF WAY (AVG. 6 PCS -1/2 OF TIME).
4 LOAD TOOL BOX TO PALLET, GET ON-GET OFF, UNLOAD BO X AND SET ASIDE.
5 MOVE PALLET TO AND FROM DOOR, RAISE AND LOWER, POS ITION TO WORK.
6 REMOVE AND INSTALL 12 SCREWS IN DUST COVER (OUTDOO RS ONLY).
7 REMOVE AND INSTALL 2 DUST COVER SECTIONS (1/2 OF T IME).
8 REMOVE AND INSTALL 2 SUPPORTING BRACKET BOLTS (1/2 OF TIME).
9 REMOVE AND INSTALL 2 SUPPORTING BRACKETS.
10 MOVE PARTS FROM PALLET AND PLACE ON PALLET.

NT 308 1 TURN SWITCH TO "OFF".
2 TAG SWITCH "DO NOT OPEN".
3 CLOSE INTAKE AND OUTLET VALVES.
4 REMOVE SCREWS ON CONNECTION BOX COVER PLATE.
5 REMOVE COVER PLATE FROM CONNECTION BOX.
6 DISCONNECT 3 WIRES.
7 INSULATE 3 WIRE ENDS WITH TAPE.
8 DISASSEMBLE PIPE UNIONS.
9 REMOVE 4 HOLD-DOWN NUTS FROM LAG BOLTS.
10 ADDITIONAL TIME TO REMOVE "STUBBORN" NUTS.

NT 309 1 TURN SWITCH TO "OFF".
2 TAG SWITCH "DO NOT OPEN".
3 CLOSE INTAKE AND OUTLET VALVES.
4 REMOVE SCREWS ON CONNECTION BOX COVER PLATE.
5 REMOVE COVER PLATE FROM CONNECTION BOX.
6 DISCONNECT 3 WIRES.
7 INSULATE 3 WIRE ENDS WITH TAPE.
8 DISASSEMBLE PIPE UNIONS.
9 REMOVE 4 HOLD-DOWN NUTS FROM LAG BOLTS.
10 ADDITIONAL TIME TO REMOVE "STUBBORN" NUTS.

NT 310 1 TURN SWITCH TO "OFF".
2 TAG SWITCH "DO NOT OPEN".
3 CLOSE INTAKE AND OUTLET VALVES.
4 REMOVE SCREWS ON CONNECTION BOX COVER PLATE.
5 REMOVE COVER PLATE FROM CONNECTION BOX.
6 DISCONNECT 3 WIRES.
7 INSULATE 3 WIRE ENDS WITH TAPE.
8 DISASSEMBLE PIPE UNIONS.
9 REMOVE 4 HOLD-DOWN NUTS FROM LAG BOLTS.
10 ADDITIONAL TIME TO REMOVE "STUBBORN" NUTS.
11 USE STEP LADDER.

NT 311 1 INSTALL MOUNTING STUDS IN CONCRETE.
2 INSTALL NUTS TO HOLD DOWN.
3 ALIGN AND LEVEL UNIT.
4 ASSEMBLE PIPE UNIONS.
5 REMOVE INSULATION FROM WIRES.
6 CONNECT WIRES.
7 PLACE COVER PLATE ON CONNECTION BOX.
8 PLACE SCREWS IN CONNECTION BOX COVER PLATE.
9 OPEN INTAKE AND OUTLET VALVES.
10 TURN SWITCH "ON".
11 TEST RUN UNIT.

NT 312 1 TEST RUN UNIT.
2 INSTALL MOUNTING STUDS IN CONCRETE.
3 INSTALL NUTS TO HOLD DOWN.
4 ALIGN AND LEVEL UNIT.
5 ASSEMBLE PIPE UNIONS.
6 REMOVE INSULATION FROM WIRES.
7 CONNECT WIRES.
8 PLACE COVER PLATE ON CONNECTION BOX.
9 PLACE SCREWS IN CONNECTION BOX COVER PLATE.
10 OPEN INTAKE AND OUTLET VALVES.
11 TURN SWITCH "ON".

NT 313 1 INSTALL MOUNTING STUDS IN CONCRETE.
2 INSTALL NUTS TO HOLD DOWN.
3 ALIGN AND LEVEL UNIT.
4 ASSEMBLE PIPE UNIONS.
5 REMOVE INSULATION FROM WIRES.
6 CONNECT WIRES.
7 PLACE COVER PLATE ON CONNECTION BOX.
8 PLACE SCREWS IN CONNECTION BOX COVER PLATE.
9 OPEN INTAKE AND OUTLET VALVES.
10 TURN SWITCH "ON".
11 USE STEP LADDER.

NT 314 1 ASSEMBLE PIPE UNIONS.
2 REMOVE INSULATION FROM WIRES.
3 CONNECT WIRES.
4 PLACE COVER PLATE ON CONNECTION BOX.
5 PLACE SCREWS IN CONNECTION BOX COVER PLATE.
6 ALIGN AND LEVEL UNIT.
7 OPEN INTAKE AND OUTLET VALVES.
8 TURN SWITCH "ON".
9 TEST RUN UNIT.

NT 315 1 ASSEMBLE PIPE UNIONS.
2 REMOVE INSULATION FROM WIRES.
3 CONNECT WIRES.
4 PLACE COVER PLATE ON CONNECTION BOX.
5 PLACE SCREWS IN CONNECTION BOX COVER PLATE.
6 ALIGN AND LEVEL UNIT.
7 OPEN INTAKE AND OUTLET VALVES.
8 TURN SWITCH "ON".
9 TEST RUN UNIT.

NT 316 1 ASSEMBLE PIPE UNIONS.
2 REMOVE INSULATION FROM WIRES.
3 CONNECT WIRES.
4 PLACE COVER PLATE ON CONNECTION BOX.
5 PLACE SCREWS IN CONNECTION BOX COVER PLATE.
6 ALIGN AND LEVEL UNIT.
7 OPEN INTAKE AND OUTLET VALVES.
8 TURN SWITCH "ON".
9 TEST RUN UNIT.
10 USE STEP LADDER

NT 317 1 GET AND SET UP PORTABLE ELECTRIC DRILL AND EXTENSI
ON CORD AND PLACE DRILL BIT IN CHUCK
2 OBTAIN BOX OF TREADS AND CARRY TO SITE
3 POSITION TREAD ON STEP
4 INITIAL LAYOUT OF TREAD ON STEP TO DETERMINE SPACI
NG
5 POSITION TREAD WITH RULE
6 POSITION PORTABLE DRILL TO HOLE IN TREAD
7 DRILL THROUGH STEP
8 PLACE SCREW IN DRILLED HOLE
9 INSTALL NUT TO SCREW FROM UNDERSIDE OF STEP AND TI
GHTEN
10 LOOSEN AND TIGHTEN DRILL CHUCK TO REMOVE AND INSTA
LL BIT FOR SHARPENING
11 REMOVE AND LATER INSTALL DRILL BIT
12 SHARPEN DRILL BIT ON GRINDING WHEEL

NT 318 1 RADIO CHECK WITH AIRFIELD TOWER DURING JOB
2 DISCONNECT CABLE FROM TAPE AND PULL OUT AND REMOVE
OLD TAPE FROM BOTH SIDES OF RUNWAY
3 PULL NEW TAPES FROM REELS ON TRUCK TO TUNNELS
4 PUNCH HOLES IN TAPES AND TIE TOGETHER TO PULL NEW
TAPE ONTO DRUM
5 WIND NEW TAPES ONTO DRUMS
6 PULL NEW TAPE TAUNT AND ATTACH HARDWARE AND CABLE
7 INSPECT ARRESTING CABLE ALIGNMENT AND TIE OFF BUFF
ER TIRES AND "DOUGHNUTS"
8 ROLL UP OLD TAPES AND LOAD TAPES AND SCRAPS INTO T
RUCK